NOVEMBER 10, 1934

Railway Age

FOUNDED IN 1856

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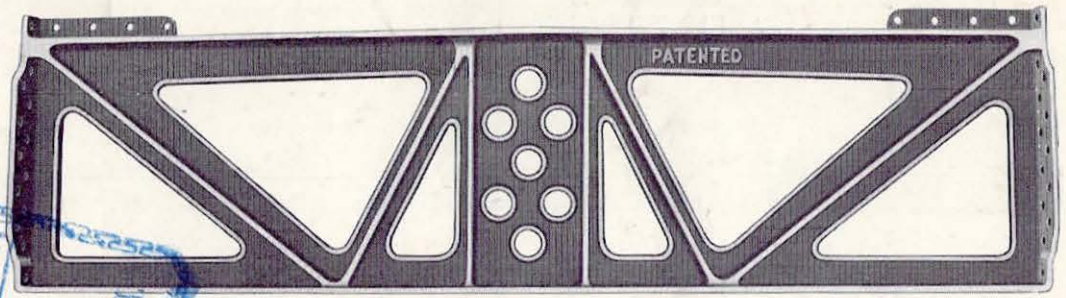
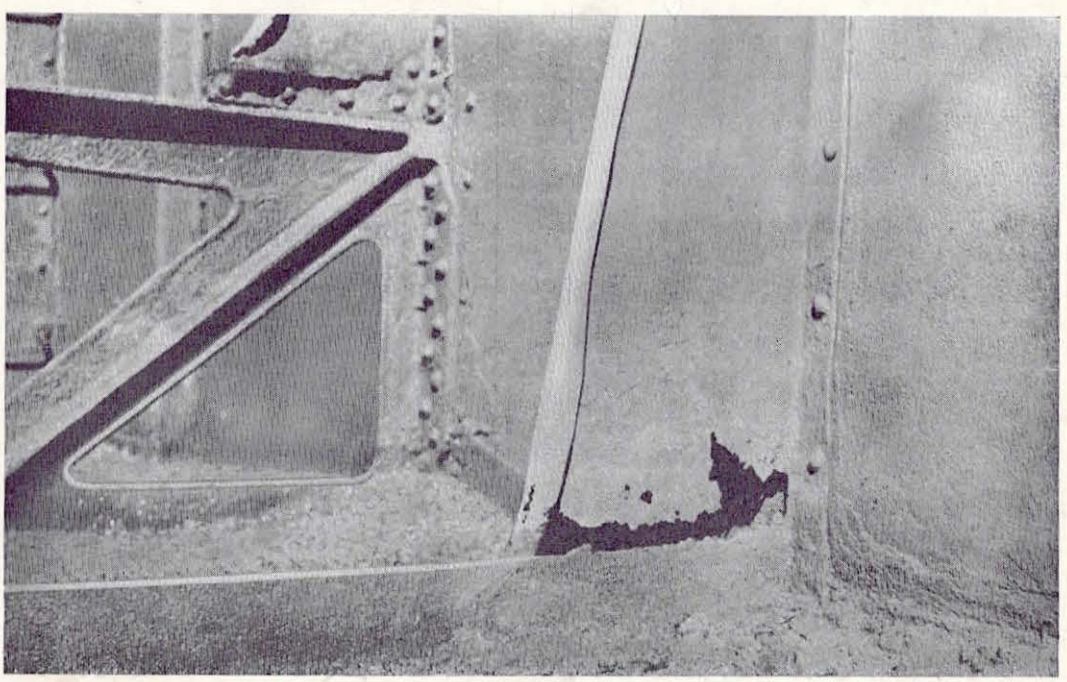


AFTER 11 YEARS SERVICE

UNITCAST

CONSTRUCTION SHOWS NO PRONOUNCED DETERIORATION



THE UNITCAST CO. TOLEDO

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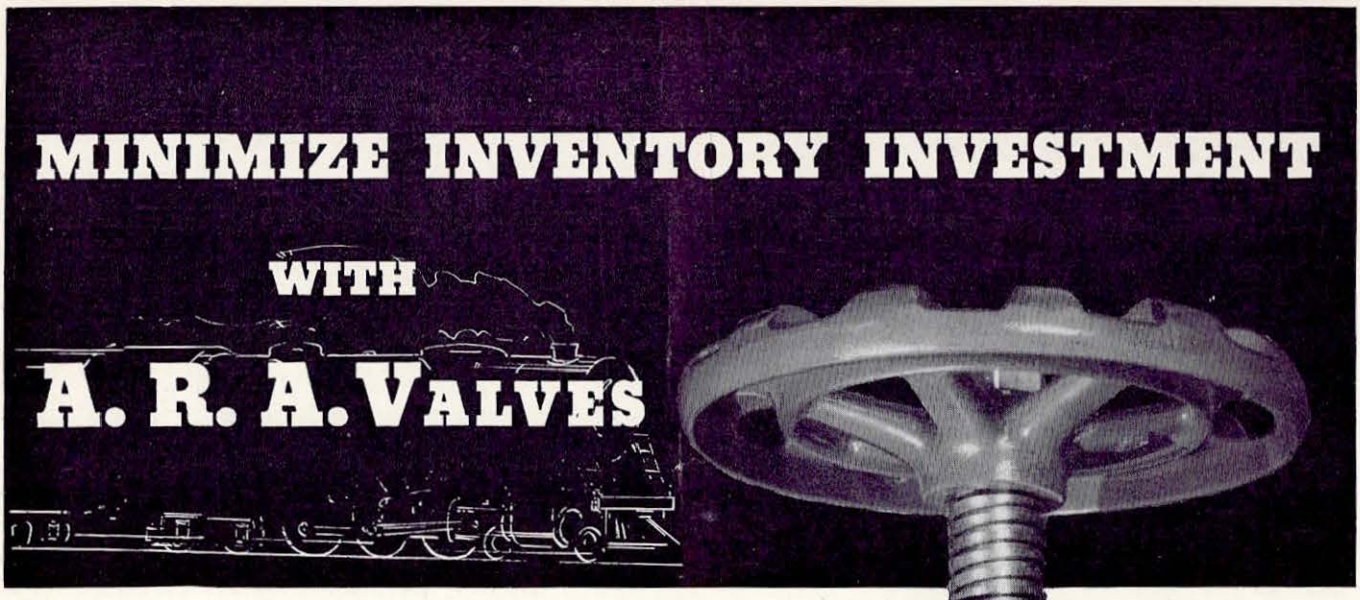
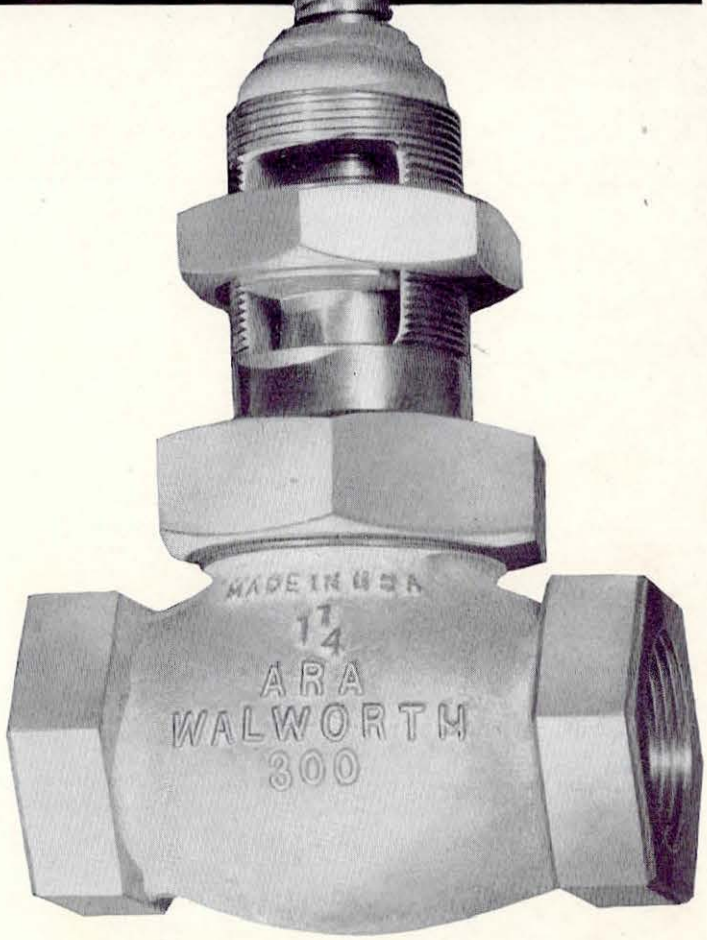
MINIMIZE INVENTORY INVESTMENT

WITH A. R. A. VALVES



Many Roads use as many as five different makes of valves on their locomotives and have to carry parts of valves for all of these different makes. In all types of the A.R.A. valve, sizes ¼" to 2" inclusive, with the exception of the bodies, there are 102* parts in the A.R.A. line of valves required to repair the valves completely, which means that a Road carrying five different makes other than the A.R.A. valve would have to carry at least 510 different parts, which must be kept at all important repair points on the Railroad.

By standardizing on the A.R.A. valve, this number can be kept to 102 parts, which means less investment in inventory, and because of the closer tolerances required by the A.R.A. Specifications, repairs can be made very quickly through no loss of time in fitting parts.



** On account of the sturdy design of the A.R.A. Valve, at emergency repair points, stocking 16 parts, that is, the eight alloy seats and discs, would, we believe, suffice.*

WALWORTH

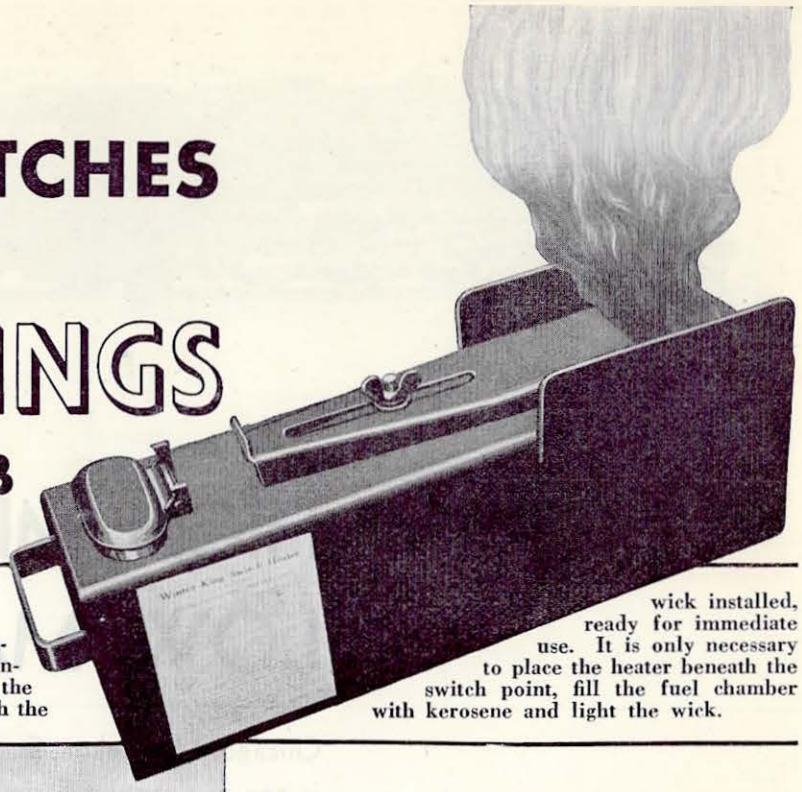
VALVES
FITTINGS
and TOOLS
Backed by
91 Years' Service

WALWORTH COMPANY
60 EAST 42nd STREET, NEW YORK

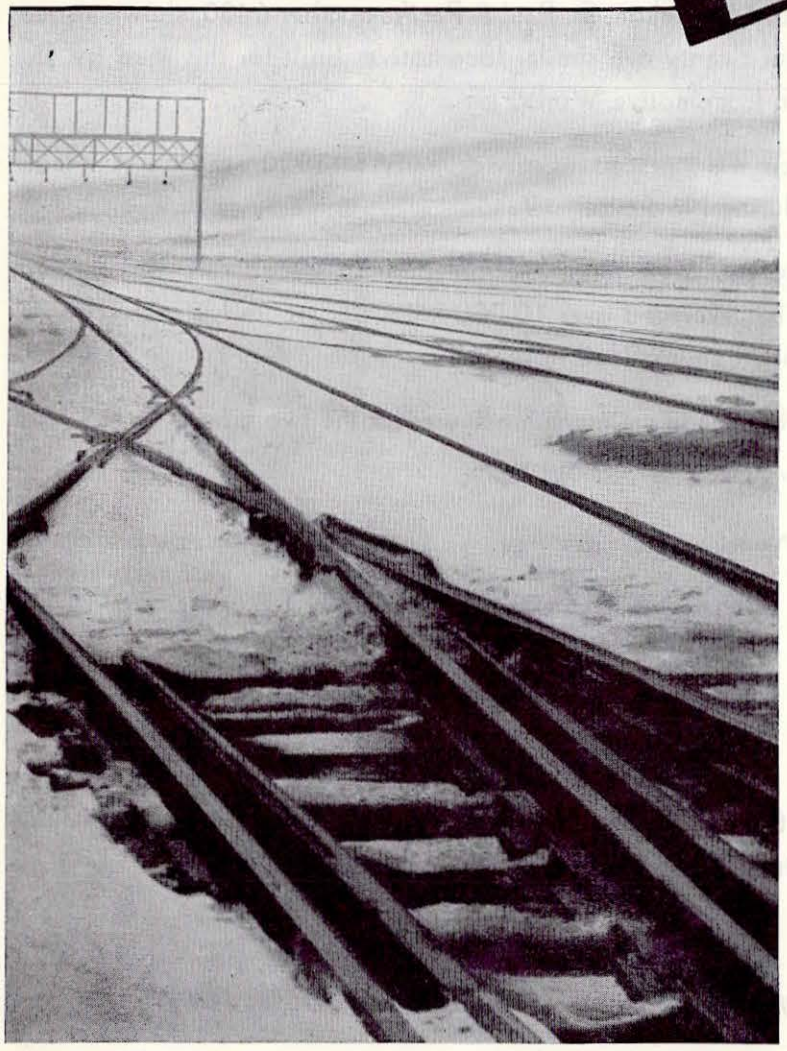
DISTRIBUTORS IN PRINCIPAL
CITIES THROUGHOUT THE WORLD

Published weekly by Simmons-Boardman Publishing Company, 1309 Noble Street, Philadelphia, Pa. Entered as second class matter January 4, 1933, at the Post Office at Philadelphia, Pa., under the Act of March 3, 1879.

NO FROZEN SWITCHES WITH WINTER KINGS ON THE JOB



The Winter King Switch Heater is made of copper-bearing steel. The fuel chamber contains about 1½ gals., sufficient for about 9 hours of ordinary operation. A flange on each side of the wick opening maintains the proper distance between the heater and the bottom of the switch point. Heaters are shipped with the wick installed, ready for immediate use. It is only necessary to place the heater beneath the switch point, fill the fuel chamber with kerosene and light the wick.



Now is the time to install Winter King Switch Heaters under all important switches. Then let the blizzards come. They'll find the vulnerable points of the system thoroughly protected. Winter Kings prevent nearly all of the trouble from moderate snowfalls and make it a lot easier to keep terminals open in heavy storms.

Winter King Switch Heaters are not only thoroughly effective, but economical as well. It costs very little to operate these heaters as compared with other methods of snow removal. One man can tend efficiently about 100 heaters. A single filling of kerosene lasts about 9 hours.

With Winter Kings in place it's easier to forestall the effects of a sudden snow or ice storm. It's so little trouble and expense to send a few men out to light up the heaters when the storm begins, while there's a natural tendency to avoid getting a large crew on the job for manual cleaning until actual trouble makes it necessary. Another advantage in using Winter Kings lies in avoiding the risk of accidents that goes with having a large number of inexperienced men at work in the yards.

Winter Kings installed now will prevent a lot of grief later on.

BETHLEHEM STEEL COMPANY

District Offices: Atlanta, Baltimore, Boston, Bridgeport, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Houston, Indianapolis, Milwaukee, New York, Philadelphia, Pittsburgh, St. Louis, St. Paul, Washington, Wilkes-Barre, York. *Pacific Coast Distributor:* Pacific Coast Steel Corporation, San Francisco, Seattle, Los Angeles, Portland, Honolulu. *Export Distributor:* Bethlehem Steel Export Corporation, New York.

BETHLEHEM STEEL

GENERAL OFFICES: BETHLEHEM, PA.

HIGH MILEAGE— LOW MAINTENANCE

Chicago, Milwaukee, St. Paul & Pacific number 6400, shown above, is one of twenty-two similar locomotives built for this road by The Baldwin Locomotive Works.

Fourteen were placed in service early in 1930 and the remaining eight during November, 1931.

Hauling passenger trains of from nine to fifteen cars, this modern power has averaged over 10,000 miles per month for each locomotive since being placed in service.

The mileage and maintenance figures for the two groups up to October 31, 1933, are as follows—

Class	*Number of locomotives*	*Average age (months)*	*Average miles per month*	*Average maintenance cost per mile (cents)*
F-6	*14*	*45*	*9,647*	*14.5*
F-6a	*8*	*24*	*10,816*	*12.7*

It was one of the F-6 locomotives—number 6402—that recently broke the world's record for sustained steam train speed by making 68.9 miles at an average speed of 89.92 miles per hour.

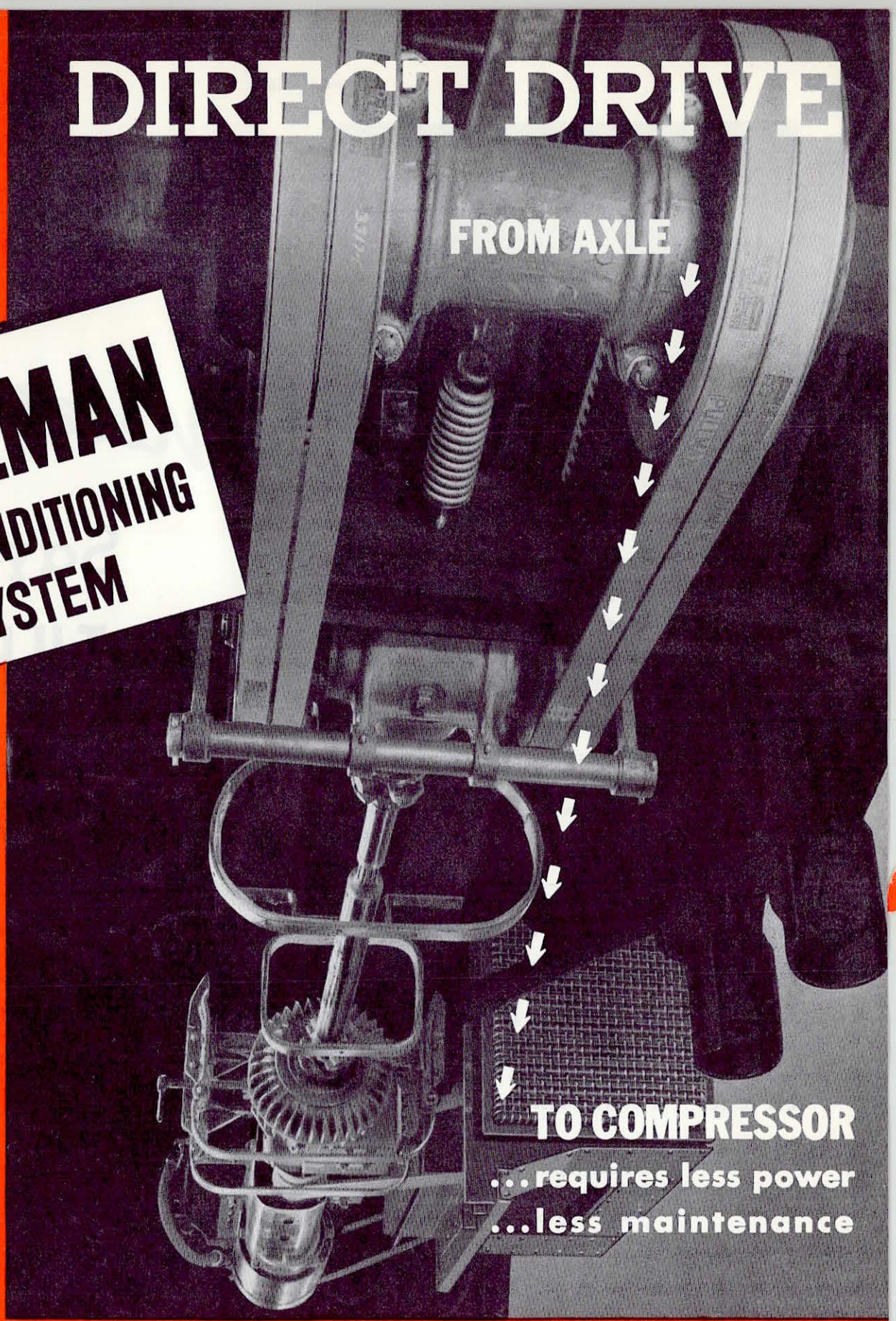
It takes Modern Locomotives to make money these days!

THE BALDWIN LOCOMOTIVE WORKS

PHILADELPHIA

DIRECT DRIVE

PULLMAN AIR CONDITIONING SYSTEM



A worm's-eye view

PULLMAN

CAR & MANUFACTURING CORPORATION

Chicago · San Francisco · Washington · Birmingham

"An Imperative Necessity" Says J. R. TURNEY

In an address at the Annual Convention of the American Association of Railroad Superintendents at Chicago, June 20, 1934, Mr. J. R. Turney, Director, Section of Transportation service, Federal Co-Ordinator of Transportation, made the following interesting and timely observations on the subject of friction in railroad rolling stock:

*"An imperative necessity is a reduction in the time and cost of stopping and starting the train. This is largely a question of friction. * * * In every other form of traction, including, I believe, wheelbarrows and baby buggies, it has been found necessary to reduce as far as possible wastes due to friction. * * * Hot boxes and brittle wheels and draft gear should have passed out with wooden axles—which brings forth the sixth specification—non-friction bearings."*

Timken Tapered Roller Bearings are important factors of friction elimination and low operating and maintenance costs on 162 railroads in all types of equipment —including locomotives. The number of repeat orders for Timkenized rolling stock placed by these roads should be one of the strongest incentives for the adoption of Timken Bearings by every railroad.

[ALL RAILROAD SPEED RECORDS ARE ON TIMKEN BEARINGS]

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

TIMKEN *Tapered Roller* **BEARINGS**

When it's hard to reach bottom

specify steel bearing piles

EXPERIENCE during recent years has indicated that CB Sections as bearing piles often solve the problem of reaching a firm bottom which is otherwise economically inaccessible. Piles up to 90′ and 100′ have been driven without difficulty. It will also be found that steel H-piles may be driven under conditions in which successful penetration has been previously impossible. Detailed information will be supplied upon request.

CB SECTIONS

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★ ★

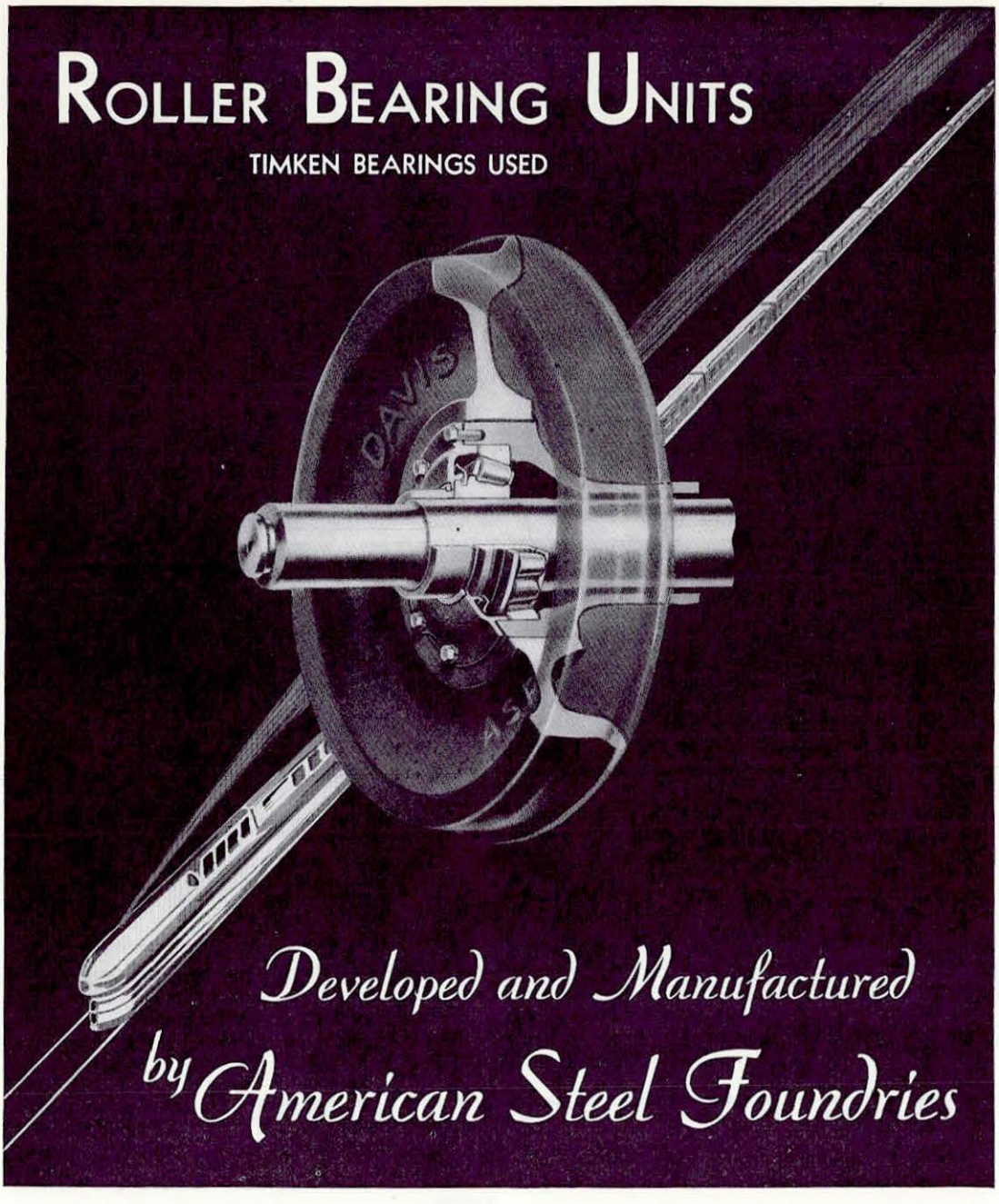
STRAIGHT FACTS FOR STRAIGHT THINKING

By Newton D. Baker

NEWTON D. BAKER, *CHAIRMAN*
NATIONAL CITIZENS COMMITTEE

1. It is true that billions are being spent by the Government in order that people may not die of cold and hunger.
2. But these billions, divided among the families in need, average for each family only about $24 a month.
3. And 70% of the free hospital services in the United States for the needy sick are provided by voluntarily supported hospitals. The sick among the unemployed number 48% more than among the employed.
4. Likewise public health nurses, also supported by your voluntary gifts, report that 66% of all their visits in 1933 were in homes unable to pay for the service rendered.
5. 30% more children have had to be removed from their own homes and cared for by voluntarily supported children's agencies.
6. Two-thirds of all the arrests for crime involve persons between the ages of 15 and 24 years. Millions of boys and girls living under conditions destructive to character need the character-building services of your recreation agencies.
7. A man may die of despair, as well as of hunger, for suicides, numbering 15,368 in 1928, grew to 20,927 in 1932. This shows that more and more people are ceasing to value the only kind of life they are able to attain.
8. America cannot be rebuilt by relief measures alone.
9. Your local community chest needs your support during this year of rebuilding human hope and morale. It supports hospitals, clinics, child-care organizations, character-building agencies and many other social services.
10. When you give in your city, you strengthen the forces of civilization in the neighborhood in which you live.

1934 *MOBILIZATION FOR HUMAN NEEDS*



The application of American Steel Foundries Roller Bearing Units to railway equipment assures uninterrupted service and a reduction in maintenance attention.

They minimize the power required to start a train, protect wheels against rapid wear, reduce lubricating cost, eliminate hot boxes and are an insurance against damaged or broken axles.

Other factors being equal, the traveler today seeks the railroad that will take him to his destination with the least delay and in the most comfort.

American Steel Foundries Roller Bearing Units contribute more to this end than any other item of equipment.

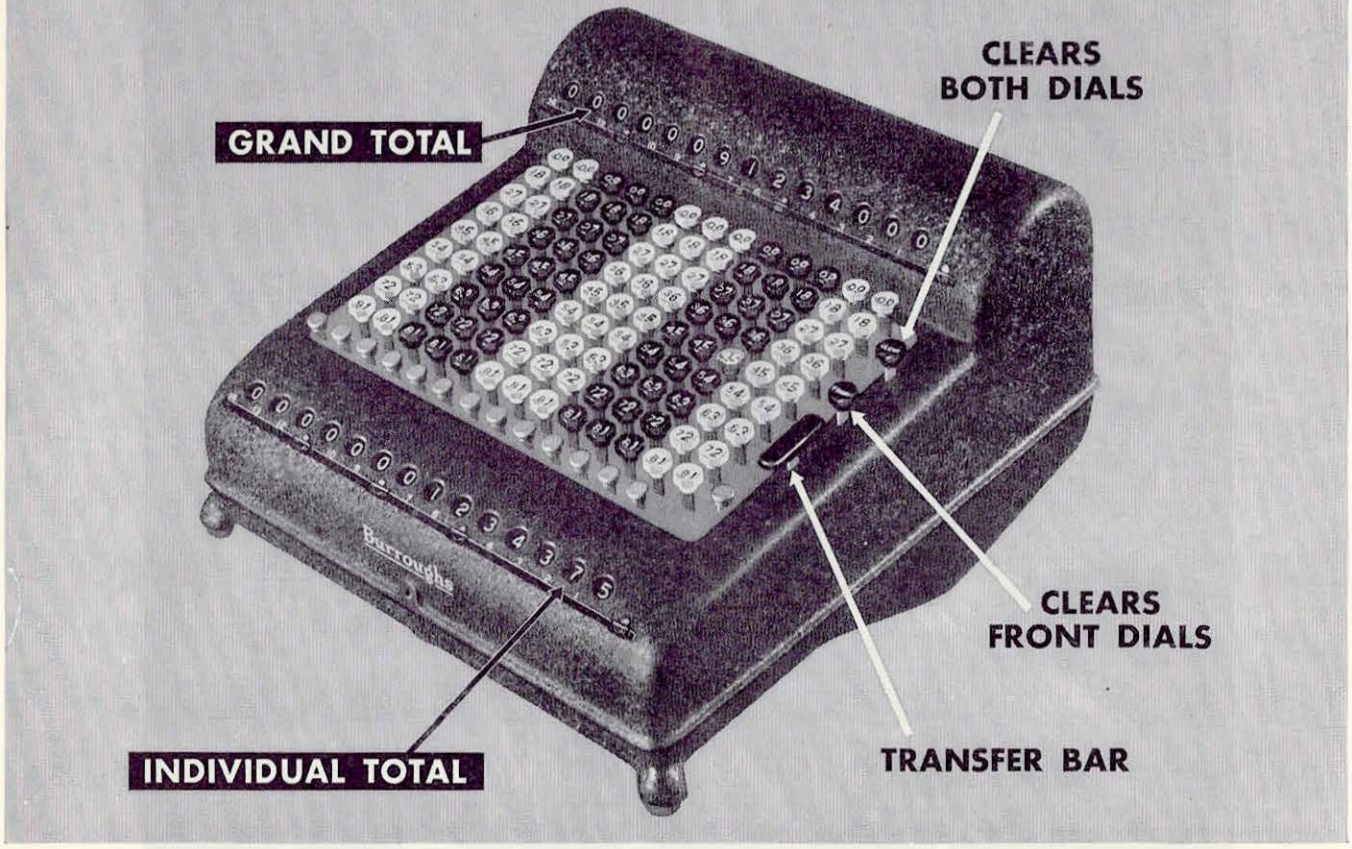
The utmost comfort for passengers at all speeds.

AMERICAN STEEL FOUNDRIES

NEW YORK CHICAGO ST. LOUIS

Burroughs

DUPLEX CALCULATOR



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TWO SETS OF DIALS Individual totals are obtained in front dials, then transferred electrically to rear dials for accumulation into a grand total. The two sets of dials are well separated to avoid confusion.

ELECTRIC TRANSFER Touching the transfer bar enters the amount of the individual total in rear dials electrically, and clears the front dials.

ELECTRIC CLEARANCE A single touch of a key clears the front dials without transferring; another key clears both dials simultaneously. Both operations are electric. No cranks to turn; no levers to pull.

FASTER SUBTRACTION Entirely new feature provides the simplest method of subtraction on any key-actuated calculating machine.

FRACTIONAL CENT The machine gives, or takes, the half-cent as desired; or accumulates fractional amounts in the normal way.

OTHER ADVANTAGES The Duplex, like other Burroughs Electric Calculators, has a uniform light touch for all keys; fast, positive action; and is completely controlled with one hand. Accuracy is electrically enforced. The motor does the work.

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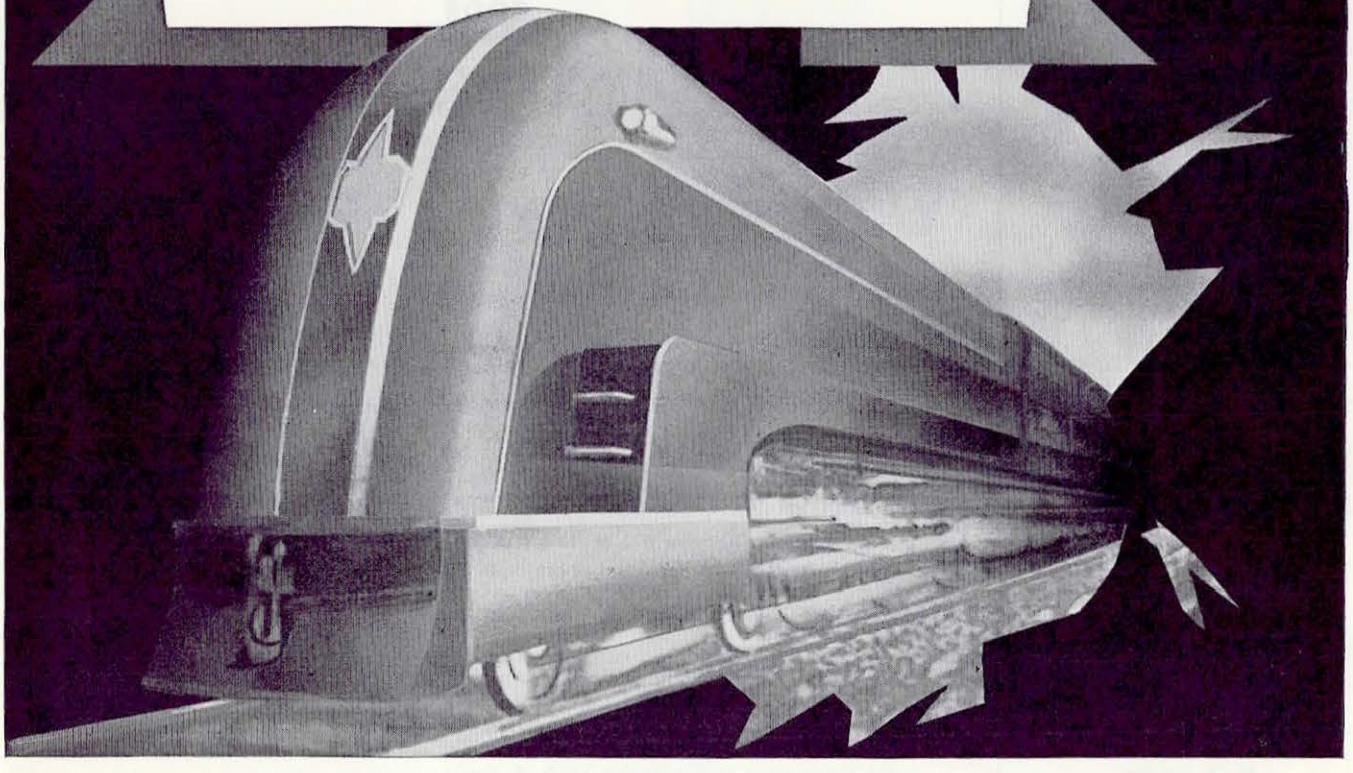
ONCE IT WAS FUTURE NOW IT'S PRESENT!



A FEW YEARS AGO railroad men discussed the possibilities of better car and locomotive materials—light, strong metals that would conserve motive power, produce more payload, and lighten costly profit-eating dead weight.

Now these better materials are here, ready to be used, ready to help you improve your rolling stock and earn dividends—ARMCO STAINLESS STEEL ALLOYS. Naturally, these finely-finished metals have an excellent strength/weight ratio and are extremely corrosion-resistant; naturally, too, they are surprisingly easy to form and pleasing to look at. But before everything else, they definitely promise you lighter, swifter, economical cars that yield more payload profit. For your mechanical department we have an instructive book on the fabrication of ARMCO STAINLESS STEEL ALLOYS. For you we have a convincing story on these new-day metals that will be well worth your time to hear. Just tell our nearest office that you are interested.

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ARMCO ARMCO **MADE TO HIGHEST METALLURGICAL STANDARDS**

Stainless Steels

ENDURE ★ BOOST YOUR PAYLOADS

RAILWAY AGE

Politics, Economics and Business

The discussion by politicians during the campaign that ended this week has shown how little business and the public can depend at present upon political discussion to help elucidate and solve economic problems.

Most Republicans attacked certain New Deal policies as revolutionary and retarding recovery. Most Democrats attacked certain policies of past Republican administrations as causing and prolonging the depression, and defended the New Deal policies attacked. Both were largely right and largely wrong because both parties have been responsible for policies that, for political reasons, they have to defend, but that economically are indefensible. Political help in solving economic problems demands that all important issues be squarely joined by opposing parties and so discussed that the voters can know exactly what each party favors and opposes, and why. Nothing of this kind occurred during the recent campaign. Its results mean little or nothing to those who are concerned with economic problems and not with political maneuvering regarding them. This is partly because the political discussion threw much too little light on what economic policies the Democrats favor; but much more because it left everybody almost in the dark as to what economic policies the discordant Republican opposition favors.

The Old Deal and the Depression

Every student who is concerned with politics only as it affects economics knows that many criticisms of the Old Deal under Republican rule made by exponents and defenders of the New Deal are justified. Under the Old Deal both government and business policies were followed that helped to cause the depression. Both government and business caused the inflation that resulted in the stock market boom and collapse. They ignored the plain fact that the conversion of the United States from a debtor to a creditor nation by the war had rendered it impossible for it to maintain an excess of exports over imports if it was to collect its debts, and made the situation worse after the depression began by increasing tariffs. The increase of tariffs, by reducing imports, inevitably reduced exports, especially of agricultural products, and helped to ruin American agriculture, the principal market of American industry, and thereby to ruin industry itself. By its transportation policies of unequal regulation and subsidization the Old Deal helped to create the grave railroad situation and problem which confronts the New Dealers. Many Republican members of Congress who have talked glibly about the necessity of balancing the budget helped to make its balancing more difficult by voting at the last session of Congress to override the President's veto and increase veterans' bonuses and the pay of government employees.

Responsibility of Business Men

Politicians have not been by any means entirely responsible for the harmful economic policies of either the Old Deal or the New Deal. Many business men have joined with politicians of both parties in promoting them in the supposed immediate interest of their own industries and regardless of their probable long-range effects upon business as a whole. Therefore, important as is the question as to what politicians are going to do in future, no less important is the question as to what business men are going to do.

All our various economic problems are merely parts of one great problem—that of revising business in general by increasing the total volume of production and commerce. Prosperity creates a seller's market because during prosperity demand increases more than supply. Depression creates a buyers' market because during depression actual or potential supply exceeds demand. The problem of increasing production and commerce is that of increasing effective buyer demand for the products of industry, the services of transporting and merchandising them and the labor employed in production, transportation and merchandising. Effective buyer demand is increased only by increasing the power and disposition of buyers to buy goods of all kinds—durable goods as well as consumers' goods.

Raising Wages and Prices in a Buyers' Market

Now, what program has business as a whole yet offered that has been adapted to increasing effective demand for products of all kinds? None at all. On the contrary, both business and labor have been trying throughout the depression, and especially during the last fifteen months, to dictate terms to buyers in a buyers' market. Their means of reviving business has been to try to compel buyers out of reduced incomes to pay higher prices and wages. No such attempt of sellers to dictate to buyers in a depression buyers' market was ever successful in the history of business; and, as was to be expected, this latest one has failed. Buying

began to increase two years ago. It has recently been declining and recovery has been arrested because buyers have refused to pay the increased prices and wages that business and labor have tried to force upon them.

This does not present a problem merely to government. It presents to leaders in every branch of industry, commerce and finance the problem and duty of formulating and presenting to the administration and Congress a program for renewing recovery by increasing the effective demand for goods. Politicians of all parties will consider such a program from the standpoint of their supposed political interests, which usually are class and sectional, not national. But some things are certain. The Roosevelt administration desires economic recovery. The public desires economic recovery. Administration and public will, therefore, give great weight to any program sponsored by leaders in every kind of business for the revival of all business.

Needed—a Program for All Business

The principal difficulty of business leaders in formulating and agreeing upon such program will be that of avoiding considering every part of it from the standpoint of its probable immediate effect upon their own kind of business. Experience during the depression should now have been sufficient, however, to have convinced even the most selfish and narrow-minded that the only way really to revive any kind of business is to revive all business. Business men who cannot consider the great problems presented primarily as problems of business as a whole, and only secondarily as problems of their own business, are as useless under present conditions as politicians who cannot consider them primarily from a public standpoint and only secondarily from a partisan standpoint.

The Roosevelt administration has made serious mistakes in subordinating recovery to reform. It must, however, in all fairness be said that the Old Deal included plenty of both government and business policies and practices that demanded reform. It must also in fairness be said that business and labor, in their selfish and shortsighted efforts in a buyers' market to compel buyers to pay higher prices and wages have given only too much encouragement to New Deal policies inimical to recovery. If recovery is to occur business must itself adopt and advocate policies favorable to recovery as well as unitedly, energetically and courageously oppose government or labor policies inimical to it.

Organized Labor Versus Business

The Roosevelt administration is still in power. If recovery is to be accomplished within the next two years it must be largely by its efforts. Organized labor has a definite program of further increasing hourly wages and costs of production by establishing a 30-hour week with the same pay as for the number of hours worked now. It is another attempt to dictate to buyers who, in the present buyers' market, already refuse to pay present wages and prices. It is as inimical to the recovery of all kinds and every kind of business as any program could be. Its application to the railways, either with or without other measures advocated by railway labor union leaders to increase expenses, would bankrupt almost every railway in the country, and, while they were on the way to bankruptcy, cause retrenchments in buying that would be disastrous to the durable goods industries. But, however bad its program, organized labor will fight for it. Undoubtedly business can formulate a program more acceptable to the Roosevelt administration. In fact, all reports indicate that the administration will oppose labor's 30-hour week program if supported in doing so. But the administration cannot reasonably be expected strongly and effectively to oppose it without strong support from business and agriculture. The strongest support business can give will be by formulating a definite program of its own of opposition to unsound policies and adoption and advocacy of definite sound policies intended to revive all business, and of organized and militant action in behalf of its program. Business must fight with as much union, energy and courage for policies to reestablish business and employment as organized labor will fight for policies and power that would indefinitely postpone recovery and re-employment.

Most politicians, regardless of party, will support the side they think has the support of public sentiment. By organized educational work business can get the overwhelming support of public sentiment for a sound and constructive program. It is depressing to anticipate the possible outcome if business does not organize and fight.

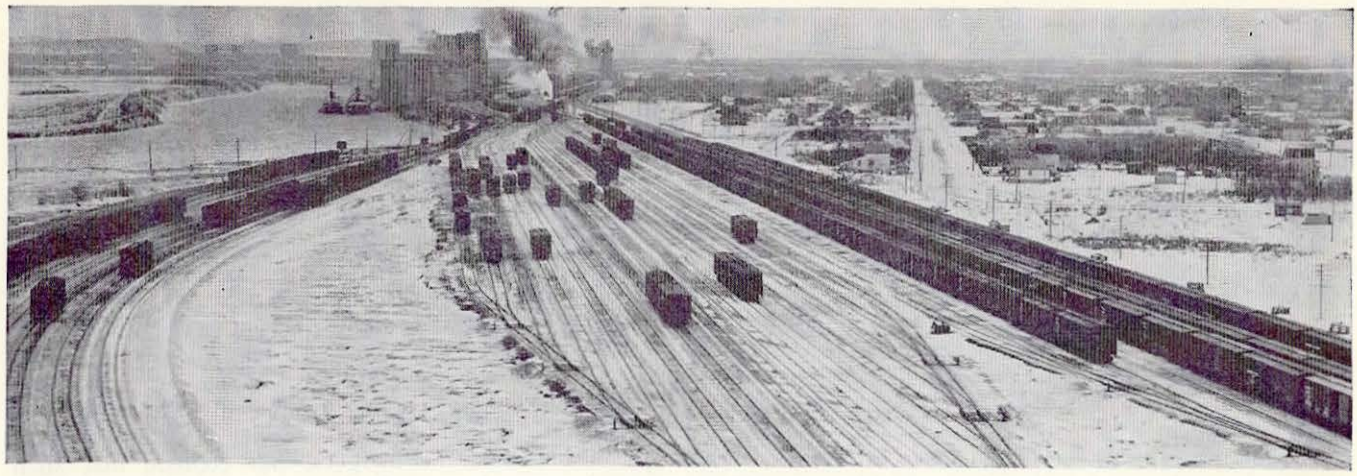
Only Legality of Rate Rise Is Up to I. C. C.

Opposition to the requested advances in railroad rates is to be offered by shippers of all the commodities selected by the railroads for increased charges. This will necessarily involve allegation by shippers in the case of each commodity that the rate, if advanced as suggested, would be more than a reasonable maximum. . . .

Only the legality of the advances is in issue before the Interstate Commerce Commission—not the wisdom or unwisdom of the managements in proposing them, nor the nature of their effort upon business in general. Unless the Commission finds that the proposed rates would be "unreasonable" under Section 1 or would violate some other section of the law, it is bound to permit their establishment. If it were to base its decision on anything but the law, it would be exceeding its powers, and it may be regarded as certain that it will not intentionally do any such thing, nor is it likely to blunder unintentionally into such a position. . . .

Of course no one can anticipate the Commission's decision, least of all the Commission itself, which must act on evidence yet to be taken. But the essence of the matter is that the case is one which must be determined under law and not by any considerations of "general policy," or by anything but the particular provisions of the law under which it is brought. . . . If that be remembered a good deal of discussion may be saved.

Thomas F. Woodlock in the Wall Street Journal.



Are Box Cars Headed for a National Pool?

The Pro and Con of Car Pooling

The first of two discussions of this live subject, presenting the arguments of those who advocate a nation-wide plan

By O. C. Castle

Director, Section of Car Pooling, Federal Co-ordinator of Transportation

A FREIGHT car pool is the co-ordinated operation under a central control for the joint and proportionate benefit of participating car owners and users, of all cars of a given type, or types, owned by two or more railroads or car lines, or by a central agency serving two or more railroads. It may come as a surprise to you that all is not well with the freight car. In your relief at the disappearance of the old-fashioned car shortage, you have probably given little thought to other evils or abuses in our car-handling system which definitely affect the cost of railroad operation and influence your freight bill. In the emphasis which has been placed upon these factors in the expedited movement of freight and cars and the elimination of car shortages, we have failed to allow due credit to the investment factor in the ambitious program of regeneration to which the railroads pledged themselves in 1923.

During the five years from 1923 to 1927, the purchases of new equipment amounted to 12,000 locomotives and 691,000 freight cars. More than 5,000 miles of additional main track were constructed. The capital expenditure during the five-year period in providing these and other additional facilities exceeded $4,000,000,000. The relative importance of this vast investment is more readily grasped when we compare it with the total capitalization of the railroads which, in 1922, was only $17,279,726,169. I have neither the inclination nor the knowledge to pass judgment upon the wisdom of this investment. The railroads were faced with a serious situation and they met it boldly. I merely wish to point out the improvement in car service conditions was due more to increased facilities than to improved methods of car handling. In fact, the defects in methods which were in large part responsible for the unsatisfactory conditions, were obscured by the magnitude and the success of the general program of physical rehabilitation.

Empty Mileage Increasing

As evidence that the elimination of car shortages was not accompanied by reforms in other phases of car service, the records reveal that the ratio of empty mileage (which was already on an upward trend), continued to increase after 1923 at a rate which absorbed, in this non-productive movement, an increasing proportion of the 691,000 cars purchased in the five-year period. In 1933, freight cars on Class I railroads in the United States moved empty a total of 6,879,000,000 miles. More than one-third of this empty mileage represents an excess above that which was necessary on the basis of past performance, and this excess has been increasing yearly. It is clear, therefore, why the Federal Co-ordinator of Transportation established a Section of Car Pooling with instruc-

The presentation by the Federal Co-ordinator of a plan for the pooling of box cars, as set forth in the Railway Age of October 27, pages 513-516, has projected this subject definitely into the arena of railway debate. The advantages and disadvantages of this general proposal were presented before the Trans-Missouri-Kansas Shippers' Regional Advisory Board at Kansas City, Mo., on October 11, by two authorities on this subject. The advocacy of the pooling of box cars was assumed by O. C. Castle, director, Section of Car Pooling, Federal Co-ordinator of Transportation, while its disadvantages were presented by H. R. Lake, general superintendent of transportation, Atchison, Topeka, & Santa Fe. Mr. Castle's address is presented herewith. That of Mr. Lake will appear in the issue of next week.

tions to "consider whether it is feasible and desirable to extend the principle of pooling to all or any kind of equipment, and also consider other means of reducing empty car mileage."

The excess in the year 1933, as we compute it, was 2,458,000,000 car miles. That figure may help in visualizing the magnitude of this expensive and largely avoidable empty-car movement if translated into ton miles, the unit commonly used in measuring transportation performance. In round numbers, the total is 57,000,000,000 tare ton miles. We have not undertaken to compute the cost of this non-productive mileage. The railroads have a reciprocal rate of six cents per mile for empty movements. At that rate the bill for this excess would have amounted to $147,000,000 which is probably much more than it actually cost.

Various plans have been tried in an effort to control this empty mileage, but for the past 14 years all of the methods which were applied generally have been based upon what is known as the "ownership" principle which requires the return of the individual car to the rails of its owner and plans based upon this principle have invariably failed to check perceptibly the mounting volume of empty car mileage. It is significant that numerous limited arrangements entered into by groups of railroads have been successful to the extent that they ignore the principles of the "ownership" rules.

If the methods heretofore applied have been ineffectual, what other method is suggested for the correction of the condition? One alternative is the operation of the total freight car equipment of the country in a nation-wide pool; to apply to the distribution of freight cars as between railroads the principles which are universally and successfully applied to the regulation of car distribution between the regions and divisions of a single railroad system.

Car Pooling Not New Idea

Car pooling is not a new idea. The suggestion for a car pool was made by a practical car service officer as far back as 1875. In 1901, a pool was formed of all freight cars belonging to the various affiliated properties of the Pennsylvania. The cars included in that initial car pool bore 32 different sets of initials. Today they are all lettered PRR. Prior to the organization of the pool, they had been handled in interchange as foreign cars. The Baltimore & Ohio has a freight car ownership in excess of 100,000. All divisions of the 5,500 miles of railroad constituting that system are on a parity with respect to the distribution of cars. There is not a single large railroad system in the western territory that is not composed of many smaller roads whose identity has been lost these many years. Their cars are handled on a system basis. There has not been a single railroad merger or consolidation in the last 30 years under which the freight cars of the merged properties have been operated in separate fleets or under separate initials for any considerable period after the merger was perfected.

The movement of freight under refrigeration is one of the most highly specialized items of railroad transportation. The wide range of productive fields and the practically unlimited spread of the consuming markets, combined with the seasonal character of the products, naturally lend themselves to collective methods in the control of the car supply. Evidence that this condition is recognized is found in the operation of several large refrigerator car pools. In 1932, 75 of every 100 cars of carload freight originated on Class I railroads were loaded with inter-line traffic and moved beyond the rails of the originating carriers. Approximately one-half of the mileage made by all box cars is made by foreign cars. In periods of heavy demand, 65 per cent of all freight cars are away from their home rails.

Objections to Pooling

Why do not the railroads, having recognized the benefits of pooling as applied to numerous large groups of cars, extend that principle to the regulation of interchange between the separately-owned but inseparably-linked railroad systems? There are several answers to that question, according to the point of view of the person making the answer. Some will tell you that the proposals of pool advocates are not practical. They do not deny the benefits of pooling as applied to the equipment of separate railroads brought under central operation by consolidations or mergers, but contend that such control cannot be exercised where the financial responsibility for the various groups is separate. Freight equipment, they point out, represents a capital investment by the individual railroad, whose management is responsible to its stockholders. The control over this physical property should not be delegated to an agency with no responsibility to the stockholders.

They fear that the centralization of control will lower the standard of maintenance with consequent deterioration in the condition of freight cars. They point out that requirements differ in various sections with respect to size, type and condition of cars, and that the individual railroads have provided cars to meet the peculiar conditions on their own lines. They emphasize the importance of having cars returned currently to the lines of their owners, who are generally equipped to make repairs to their own cars more economically than are foreign roads.

They contend that the incentive to maintain cars will be absent under a pool operation. This objection is generally supported by references to the deterioration of equipment during the operation of the railroads under federal control. They maintain that with an unbalanced traffic, the flow of equipment back to originating territory is necessary, and that a code of rules which provides for this return automatically is preferable to a system which relies upon distribution orders to accomplish the equalization. They claim that a pool will bring about the "regimentation" of freight cars, with the result that the railroads whose equipment is more valuable or which has been better maintained will contribute it for the benefit of less provident roads.

These objections are quite real as applied to what the objectors have in mind when they speak of a car pool. If the operation of a pool would deprive the car owner of control over his equipment and impair his ability to discharge his obligation to the shippers on his line, I would be compelled to admit that the opposition to this plan of operation is justified. If the "regimentation" of freight cars would deny to car owners an equitable compensation for the use of their cars by other roads or if it would burden car users with an excessive charge, I will have to acknowledge that the theory is unsound. But I do not grant, admit or agree to any of these premises of pool opponents.

With respect to the operations of the war-time pool, the results of that emergency activity cannot be fairly cited as an example of car pooling. Director General McAdoo announced in his "declaration of policy" that the primary object of government operation was the "winning of the war," all other considerations, including expense, being subordinated. Men and materials were preferentially applied to war purposes, and deteriora-

tion in the condition of physical property of the railroads, including freight cars, was inevitable. Not one of the other objections has been directed against any specific pool plan. They are entirely general. If, then, we shall be able to formulate a definite plan which offers means for the elimination of the waste and which meets the objections, the opposition to this proposed reform should largely disappear. It is in the development of such a plan and in the study of data bearing upon the operation of freight cars that the Section of Car Pooling has devoted its activity during the past year. We shall soon have the plan in shape for consideration by those who must make the decision.

Advantages of Pooling

Some of the benefits which may reasonably be expected to result from the character of pool which we shall propose are as follows:

The crosshaul movement of empty cars of the same type and of equal availability for loading will be materially reduced, resulting in substantial operating and capital savings.

Railroads will be assured of the use of cars equivalent in number and condition to those which they assign to the pool.

They will be assured of an equitable proportion of any surplus which may exist and which may be available for distribution, in excess of their pool assignment.

They will be assured of compensation for their equipment in the pool, on the basis of its appraised value.

Cars will be maintained at the expense of the pool, preferably in the shops of their owners, under terms which will place an incentive upon adequate and economical maintenance.

Supervision of the pool by the mechanical staff will further insure against deterioration in physical condition.

The adoption of improved designs and the stabilization of car building programs will raise the general standard of equipment, with a substantial reduction in capital costs.

Distribution will be controlled in such a manner as to locate cars according to their suitability for particular traffic.

Surplus equipment will be assembled preferably in originating territory, with equitable adjustment of the responsibility for storage.

The direct distribution of cars to shippers will not be disturbed, but will remain the function of the individual road.

Restrictions against the loading of foreign cars will be greatly modified. Shippers will not be annoyed or inconvenienced by insistence upon the use of particular ownerships.

The placement of empty cars by switching lines will be upon a much more flexible basis and there will be less delay waiting for delivery of cars from the line-haul road.

Amendment of the demurrage rules and the possible adoption of a sliding scale of charges consistent with conditions of car supply and demand, will be facilitated by the operation of cars under a pool.

The western railroads, more than any other group, should welcome any proposal which promises a better co-ordination in the operation of interchange freight cars. In the case of box cars particularly, the seasonal fluctuations in demand are greater in the West than in any other section. The West is also an originating territory for box car traffic. The railroads are called upon to provide equipment to meet their peak demands which rarely extend over longer periods than three months, leaving the burden of excess ownership to be carried through the months of lighter demand. In the absence of effective methods for utilizing the general car supply in meeting regional and seasonal demands, individual managements cannot do otherwise than maintain a car ownership fitted to the needs of each separately operated property, but they should not ignore the possibilities for economy which a co-ordinated use of freight equipment offers.

Suitability of Cars

There has been altogether too much stress laid upon theoretical differences in the character and condition of cars built to serve different sections of the country. We are told, for example, that eastern cars are too small to carry the agricultural products of the West. As a matter of fact, the average capacity of the box car on eastern roads is 86,800 lb. as compared with 84,200 lb. on western roads. Our western transportation officers say that eastern cars are not suitable for grain, flour and other high-class commodities. There is some justification for this belief in experience with past efforts to build up the grain car supply by moving fleets of eastern cars onto the western roads, but there is no comparison between such movements and a regulated interchange movement with adequate provisions for maintenance and selective distribution.

The question of condition and suitability is a vital one and it has not been minimized in our consideration of pool plans. We feel, however, that it has been somewhat magnified by those who fear that it is an obstacle to equitable distribution under pool operation. It is true that the requirements for cars suitable for high-grade commodities are higher in the West than in other sections, but even in this territory the proportion of such loading to the total is much less than is commonly supposed. The Interstate Commerce Commission commodity statistics show that the loading of all classes of grain and grain products in the western region calls for only one and one-half load per year for each box car owned by western railroads. It is recognized, of course, that much of this loading is crowded into a few weeks of the year, and that the proportion of cars suitable for this character of loading must be much higher than the yearly average would indicate.

In considering the problem of distribution on a nation-wide basis, and the special requirements of a given territory, the trend of traffic is an important factor. It is generally known that the prevailing movement of box car traffic is eastward, in a ratio of about six to four. This means that the eastern territory in general receives currently more box cars than it requires for loading to points west of Chicago and the Mississippi river. With efficient distribution on the basis of pool principles, there would be no occasion for loading cars of eastern ownership into the West.

If all of the western cars were applied to the westward loading, there would still be a current movement of western empties homeward to equalize the unbalanced loaded movement. The effect of this would be to diminish rather than to increase the scattering of cars which are best suited to the needs of particular regions. Western cars would go home and eastern cars would remain in the East. This would in no way prevent the transfer of surplus cars from the East to the West to meet peak demands, when eastern roads have a surplus of cars suitable for the western loading.

One of the things at which pool opponents stall is the magnitude of a nation-wide distribution system. To those who are awed by mere numbers, I suggest that the

principles which are applied to 1,000 cars can be applied to 2,000,000. It is all a mater of organization. In practice, the regional units of a pool organization will handle fewer cars than would be handled by a single railroad distribution if the Pennsylvania, for example, should consolidate with the Baltimore & Ohio. Furthermore, the duties of the regional pool manager would not include the detailed distribution which a railroad system officer must supervise. His would be a wholesale operation.

Wood Preservation Declined Further in 1933

THE quantity of timber given preservative treatment in the United States in 1933 was smaller than in any year since 1911, according to figures compiled by R. K. Helphenstine, Jr., forest service, United States Department of Agriculture, in co-operation with the American Wood-Preservers' Association, which were released on November 1. The railway industry maintained its status in 1933 as the principal consumer of treated timber, approximately 75 per cent of the total amount treated during the year being for the use of the carriers. The quantity of crossties treated, which has always constituted more than half of all timber treated, alone accounted for 54 per cent of the total. Crossties and switch ties combined amounted to 58.3 per cent of the total.

Wood Preservation, 1909-1933

Together with consumption of creosote and zinc chloride

Year	Total Material Treated Cu. Ft.	Number of Crossties Treated	Creosote Used, Gal.	Zinc Chloride Used, Lb.
1909	75,946,419	20,693,012	51,426,212	16,215,107
1910	100,074,144	26,155,677	63,266,271	16,802,532
1911	111,524,563	28,394,140	73,027,335	16,359,797
1912	125,931,056	32,394,336	83,666,490	20,751,711
1913	153,613,888	40,260,416	108,378,359	26,466,803
1914	159,582,639	43,846,987	79,334,606	27,212,259
1915	140,858,963	37,085,585	80,859,442	33,269,604
1916	150,522,982	37,469,368	90,404,749	26,746,577
1917	137,338,586	33,459,470	75,541,737	26,444,689
1918	122,612,890	30,609,209	52,776,386	31,101,111
1919	146,060,994	37,567,247	65,556,247	43,483,134
1920	173,309,505	44,987,532	68,757,508	49,717,929
1921	201,643,228	55,383,515	76,513,279	51,375,360
1922	166,620,347	41,316,474	86,321,389	29,868,639
1923	224,375,468	53,610,175	127,417,305	28,830,817
1924	268,583,235	62,632,710	157,305,358	33,208,675
1925	274,474,538	62,563,911	167,642,790	26,378,658
1926	289,322,079	62,654,538	185,733,180	24,777,020
1927	345,685,804	74,231,840	219,778,430	22,162,718
1928	335,920,379	70,114,405	220,478,409	23,524,340
1929	362,009,047	71,023,103	226,374,227	19,848,813
1930	332,318,577	63,267,107	213,904,421	13,921,894
1931	233,334,302	48,611,164	155,437,247	10,323,443
1932	157,418,589	35,045,483	105,671,264	7,669,126
1933	125,922,475	22,696,565	85,180,709	4,991,792

The total quantity of timber given preservative treatment in 1933 amounted to 125,922,475 cu. ft., which represents a reduction of 31,496,114 cu. ft., or 20 per cent, as compared with the quantity reported in 1932, and a decrease of 65 per cent, as compared with the peak year of 1929. Of this total, crossties comprised 68,089,695 cu. ft., a decrease of 37,046,754 cu. ft. or 53.3 per cent, from 1932, and the smallest quantity reported for any year since 1909, when compilation of these figures was begun. In that year, 62,079,036 cu. ft. of crossties were treated. Switch ties treated in 1933 amounted to 5,430,278 cu. ft., a decrease of 3,173,594 cu. ft., or 36.9 per cent, as compared with 1932. Of the eight classes of material reported, only two, poles and construction timbers, showed increases in 1933, as compared with the previous year, while the other six classifications showed decreases.

Of the 22,696,565 crossties treated in 1933, which was 12,348,918 less than the number treated in 1932, 54.1 per cent were impregnated with creosote, 32.9 per cent were treated with creosote-petroleum mixtures, 8.7 per cent with zinc chloride, 3.1 per cent with creosote in mixture with zinc chloride, and 1.2 per cent with miscellaneous preservatives. The increasing popularity of creosote-petroleum mixtures is indicated by the fact that in 1932 only 23.9 per cent of the crossties were treated with such mixtures, while in the same year 63 per cent were treated with creosote alone. All but 600 of the ties were given pressure treatment.

As usual, oak ties ranked first in the number treated, with 8,067,404, or 35.5 per cent of the total ties reported. Southern pine ties were second, with 4,483,901, or 19.8 per cent of the total, while Douglas fir was third, with 2,596,194, or 11.4 per cent. Of the total number of ties treated, 12,114,463 were sawed and 10,582,102 hewed.

Classes of Material Treated in 1933

	Cubic Feet	Per Cent of Total
Crossties	68,089,695	54.0
Switch Ties	5,430,278	4.3
Piles	6,203,613	4.9
Poles	30,120,843	24.0
Wood Blocks	388,538	0.3
Crossarms	313,440	0.2
Construction Timbers	12,156,752	9.7
Miscellaneous Material	3,219,326	2.6
Total	125,922,475	100.0

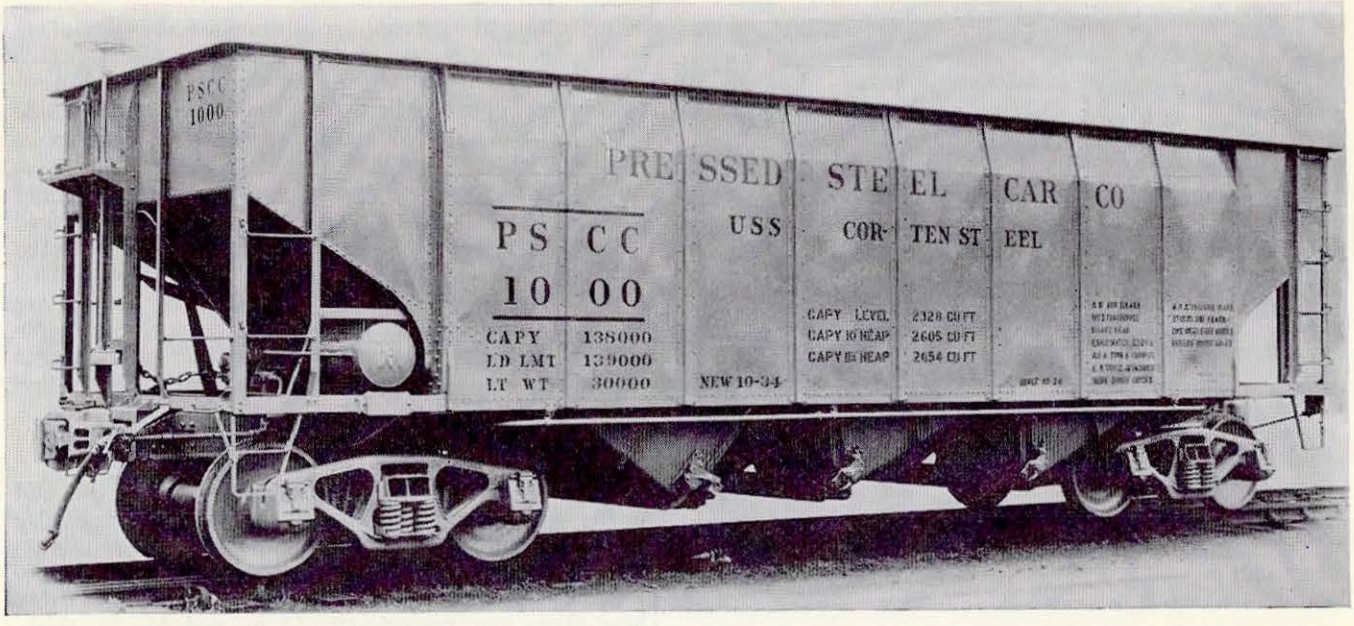
The switch ties treated amounted to 65,163,331 ft. b.m., a decrease of 38,083,142 ft. b.m., or 37 per cent, as compared with 1932. Oak ties comprised 71.5 per cent of the switch ties treated, southern pine 10.7 per cent, Douglas fir 8.6 per cent, gum 4.7 per cent, and maple 3.2 per cent.

The number of treating plants in the United States in 1933 was 210, of which 187 were active and 23 were idle. Two new plants of the pressure type were constructed during the year, while six plants were abandoned, of which five were of the pressure type and one of the non-pressure (open-tank) type. Of those in active operation, 125 were pressure-cylinder plants, 46 were non-pressure plants, and 16 were equipped for both pressure and non-pressure treatment.

Creosote consumed in the preservation of timber in 1933 amounted to 85,180,709 gal., a decrease of 20,490,555 gal., or 19.4 per cent, as compared with 1932, and the lowest figure reported for any year since 1921. The amount of creosote imported increased from 19.4 per cent of the total used in 1932, to 22.2 per cent in 1933, although this is still low as compared with 27 per cent in 1931, and 31.9 per cent in 1930. The consumption of zinc chloride decreased 2,677,334 lb., or 35 per cent, from 7,669,126 lb. in 1932 to 4,991,792 lb. in 1933. The quantity of miscellaneous salts used, 627,201 lb., showed a decrease of 242,039 lb., or 27.8 per cent, while miscellaneous liquids decreased 43,708 gal., or 47.2 per cent. The consumption of petroleum, however, which amounted to 13,230,745 gal., decreased only 368,857 gal., or 2.7 per cent.

Treatment of Miscellaneous Materials (Ft. b.m.)

	1933	1932	1931	1930
Lumber	22,200,171	33,994,619	43,119,020	76,244,055
Fence Posts	7,385,168	2,995,174	13,468,058	17,843,001
Tie Plugs	1,406,979	652,489	1,149,058	1,779,215
Crossing Plank	1,272	392,830	2,248,946	2,552,370



The Pressed Steel Car Company's Light-Weight Hopper Car

Pressed Steel Car Company Builds Cor-Ten Hopper Car

With a light weight of 30,000 lb. the car has a load limit of 69.5 tons— A pay-load ratio of over 80 per cent

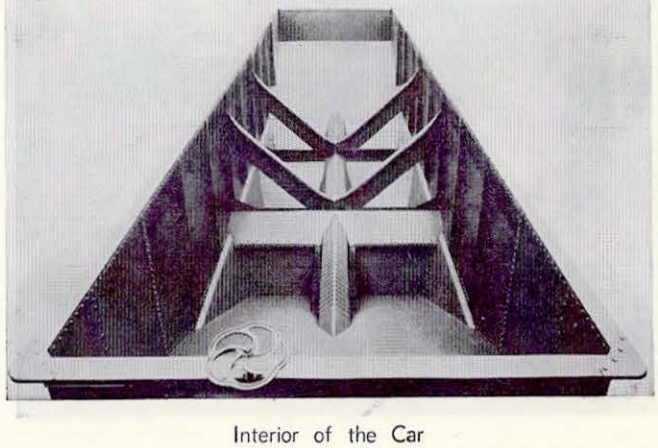
AS a demonstration of the possibilities for weight saving by the use of new materials the Pressed Steel Car Company has recently completed and is now exhibiting a hopper car with a nominal capacity of 69 tons, in the construction of which U.S.S. Cor-Ten steel, with a yield point approaching 60,000 lb., has been used practically throughout both in the rolled sections and plate. The car, which is carried on four-wheel trucks with 5½-in. by 10-in. journals, has a light weight of 30,000 lb. and a load limit of 139,000 lb. The car body is 34 ft. 10 in. in length inside by 10 ft. $4\frac{15}{16}$ in. width overall, and the top of the car body is 10 ft. 8 in. above the rail. It has a capacity of 2,605 cu. ft. with a 10-in. heap. Its ratio of paying load to gross load is 82.2 per cent at axle-load capacity and 81.9 per cent when loaded with coal at 52 lb. per cu. ft.

The body of the car is largely, although not exclusively, built up of plates and pressings, in which the corrosion-resisting quality and high tensile strength of the Cor-Ten steel have been utilized to reduce thickness. The weight-saving possibilities of alloy steel have also been used in the truck side frames, bolsters and in other castings.

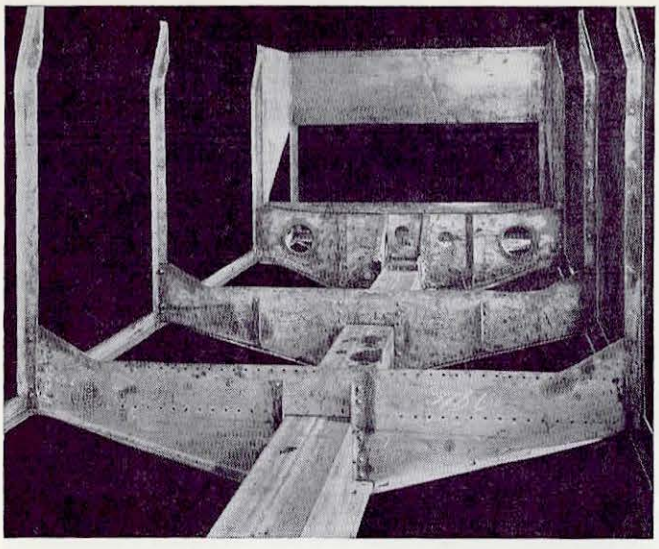
The Car Structure

The car body, which has three hoppers, is built up on an underframe, the principal member of which is a center sill of the new A.R.A. double Z-section. These sections, rolled from Cor-Ten steel, have been reduced in thickness to $\frac{5}{16}$ in. for the top flanges and webs and to $\frac{41}{64}$ in. for their bottom flanges. Each weighs 29.7 lb. per foot and the two are joined by welding continuously throughout their length. The side sills are rolled angles as are also the corner posts. The end sills are pressed angles.

There are four principal cross-members: The bolsters and two intermediate crossties under the hopper cross ridges. The bolster is made up of a vertical web of $\frac{3}{16}$ in. plate which extends up from the bottom of the center sills about 2 ft. 9 in. to the hopper floor sheets. This plate,



Interior of the Car

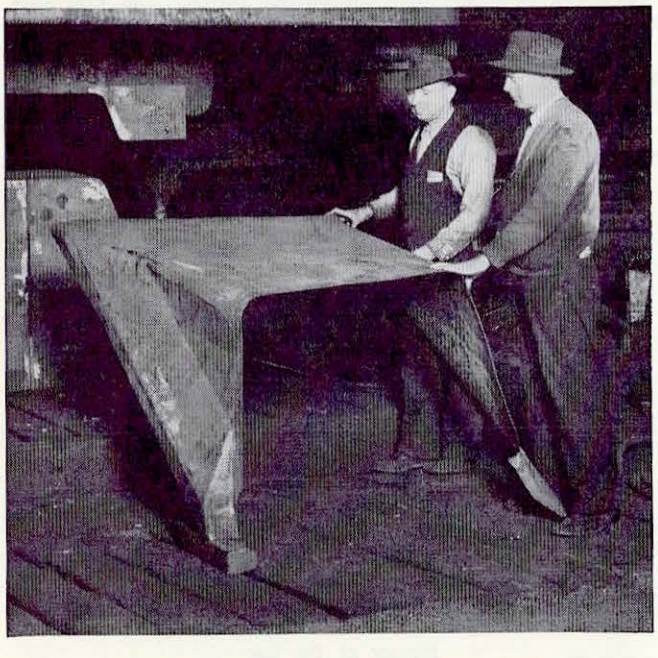


The Car Frame, Showing the Bolster and Crossties

reinforced with angle pressings, is attached by pressed flanges and angles to the floor plate and to a ¼-in. bottom cover plate which is 17 in. wide where it passes under the center sill. The edges of the cover plate are flanged down ⅞ in. to add stiffness. The crossties are ⅛-in. plate extending up from the bottom of the center sills to the cross ridges. Near the sides of the car they are increased in height to add stiffness where they are joined to the crosstie side posts. The bottom member of the crossties is a double cover plate, ¼ in. and 5/16 in. thick, which is riveted to the center-sill flanges and filler diaphragm and to pressed flanges on the bottom of the crosstie web.

Riveted to the ends of the bolsters are special pressed Z-section posts, the purpose of which is to reduce the width of the hopper at the end panels to provide a recess for ladders and grab irons. The side posts at the crossties are T-sections built up of angle pressings and riveted to the ends of the crosstie web plates. The top members of the sides and ends are 5-in. by 2½-in., 7.3-lb. bulb angles.

Among the special features of the car body is the

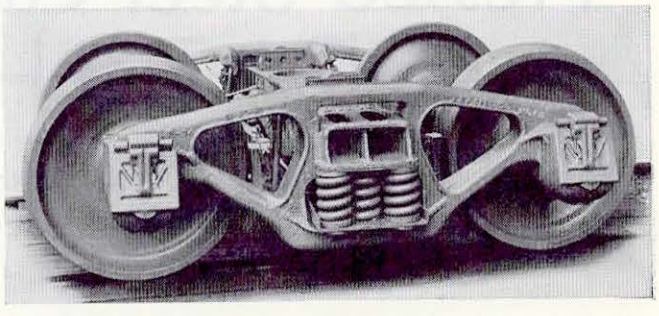


Each Hopper is Pressed from a Single Plate

shallow outward recessing or dishing of the side-sheet panels. The side sheets are formed in four pieces. Two of these extend from the ends of the car to the bolster side posts. The others extend from the bolster side posts to the center side posts, where they overlap so that the riveting through both side-post flanges passes through each plate. These plates are formed under special dies which, in addition to forming the inward slope at the tops of the panels, effect the slight outward recessing of the vertical portion of each panel. This not only adds stiffness to the sides of the car, which are formed of 3/32-in. plate, but also effects a considerable reduction in the maximum stress to which the material is subjected when the loaded car is turned over in a car dumper. The small end panel of each end side sheet is kept a flat surface in order not to interfere with ladder-rung clearance.

Recessing or dishing has been provided in the end panels of the hopper floor, the thickness of which is also 3/32 in. Owing to the use of smaller unsupported areas and the greater thickness of the material, the intermediate and hopper floor plates are installed in the car flat. These plates are, respectively, ⅛ in. and 5/32 in. thick.

One of the interesting features in the construction of the car is the use of hoppers, each formed from a single sheet extending continuously from side sill to center sill. These hoppers are pressed from 5/32-in. plate. Another unusual job of pressing is involved in the formation of



A Saving of 3,500 lb. per Car Was Effected in the Truck Design

the center-sill hood sheets. These hoods, of ⅛-in. plate, are pressed hot in corrugated form with the corrugations running over the peak of the ridge from one side of the center sill to the other.

All the side posts between the bolsters are built in two parts—one inside and one outside the car. The outside sections of the posts are all shallow U pressings of ⅛-in. plate, the purpose of which is to protect the bulges in the side-sheet panels when the car is handled in a car dumper. The flanges of these sections are riveted through the side sheets to the flanges of the inside posts. Five intermediate posts on each side of the car are of deep U section formed from 3/16-in. plate.

The diagonal braces which stiffen the side of the car against transverse pressure at the crossties are neat, effective pressings of ⅛-in. plate. The upper edge of each member is flanged over and closed in two operations, after which the edge is welded to the web to form a light, stiff member which offers no obstruction to the flow of material, whether dumped from the top or through the hoppers.

The hopper-door frame is formed of 3½-in. by 2½-in. by ¼-in. angle, with the leg parallel to the hopper sheet projecting beyond the edge of the sheet. This forms a stiff, true edge over which the door pans, pressed from 5/32-in. plate, are tightly closed.

Although not a major factor in the car structure,

welding has been used in a number of places. The ends of the longitudinal hoods are welded to the floor and to the cross ridges. Reinforcements are welded to the hopper sheets where the hopper-door locks are attached. The hopper-door frames are welded to the side sills and at their upper ends to the hopper sheets. The door hinge butts are also welded to the door-frame angles.

The Trucks

In the design of the truck each detail was scrutinized to determine the full possibilities for weight reduction. The two trucks weigh 12,200 lb. Compared with the trucks under the standard A.R.A. steel box cars, this represents a saving of about 3,500 lb. per car. The side frames and bolsters conform to A.R.A. specifications. They are cast of a high-tensile-alloy steel, advantage of which has been taken to reduce the thickness of the sections. The side frames are the double-truss type with journal boxes cast integral.

Principal Dimensions of the Pressed Steel Car Company Light-Weight Hopper Car

Length over striking plates	35 ft. 10 in.
Length inside	34 ft. 10 in.
Width inside	10 ft. 2¾ in.
Width overall	10 ft. 4 15/16 in.
Height, rail to top of sides	10 ft. 8 in.
Distance between truck centers	25 ft. 10 in.
Truck journals	5½ in. by 10 in.
Truck wheel base	5 ft. 6 in.
Light weight	30,000 lb.
Load limit	139,000 lb.
Capacity, level full	2,328 cu. ft.
Capacity, 10-in. heap	2,605 cu. ft.
Ratio capacity pay load to gross weight	82.2
Ratio capacity coal load to gross weight (coal at 52 lb. per cu. ft.)	81.9

An interesting feature in the construction of the truck is the special spring-plank design. Partly to save weight and partly to provide greater flexibility for adjustment to warped track conditions, the spring plank is made up of two short pressed channel pieces, one at each end to serve as a spring seat, which are joined across the truck by a 6-in. by 5/32-in. plate riveted to the channels at each end. Brake-beam safety angles are also riveted to the inner ends of the channel sections of the spring plank.

A material saving of weight was effected in the wheels and axles. The A.R.A. 5½-in. by 10-in. axles were hollow bored 3½ in. in diameter, with a reduction of 920 lb. per car. By the use of one-wear rolled-steel wheels a reduction of about 1,600 lb. per car was effected as compared with cast-iron wheels.

Other Details and Equipment

Aside from its use in the truck castings, high-tensile steel was employed for the striking castings, the body-bolster center braces, side-bearing brace body center plate, coupler yoke, door hinges and the door locks. In all cases advantage was taken of the improved physical properties of the steel to effect weight reduction. The brake levers, brake rods and brake-lever guides are of Man-Ten steel. The brake reservoir is formed of Cor-Ten steel, welded. Cor-Ten steel rivets were used through the structure.

Among the important items of special equipment are the AB brake, furnished by Westinghouse, Edgewater ring-spring draft gears, Stucki roller side bearings, Wine door locks and the A.R.A. geared type hand brake. The principal dimensions and data are shown in the table.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading for the week ended October 27 totaled 624,252 cars, a decrease of 16,028 cars as compared with the total for the preceding week and of 18,171 cars as compared with the corresponding week of last year. This was, however, an increase of 6,968 cars as compared with 1932. Apparently the peak for the year was the week of September 15 when the total was 645,986 cars. All commodity classifications showed decreases as compared with the week before and all except miscellaneous freight and live stock showed decreases as compared with last year. The summary, as compiled by the Association of American Railroads, follows:

Revenue Freight Car Loading

Week Ended Saturday, October 27, 1934

Districts	1934	1933	1932
Eastern	132,187	139,206	131,495
Allegheny	113,644	119,527	111,663
Pocahontas	44,370	45,132	45,909
Southern	88,653	89,425	91,703
Northwestern	84,522	83,386	75,159
Central Western	105,476	110,471	103,104
Southwestern	55,400	55,276	58,251
Total Western Districts	245,398	249,133	236,514
Total All Roads	624,252	642,423	617,284
Commodities			
Grain and Grain Products	28,702	30,157	31,962
Live Stock	25,336	22,146	23,615
Coal	122,069	132,382	128,901
Coke	5,227	6,408	4,559
Forest Products	21,966	24,174	18,862
Ore	14,655	19,917	5,984
Merchandise L.C.L.	162,279	171,733	177,218
Miscellaneous	244,018	235,506	226,183
October 27	624,252	642,423	617,284
October 20	640,280	657,005	641,985
October 13	635,639	670,680	649,690
October 6	631,318	662,373	625,089
September 29	644,647	669,186	621,658
Cumulative Total, 43 Weeks	25,840,288	24,247,161	23,506,740

The freight car surplus for the first half of October averaged 319,700 cars, an increase of 2,17[illegible] cars as compared with the last half of September. The total included 196,761 box cars, 94,308 coal cars, 8,511 stock cars and 8,532 refrigerator cars.

Car Loading in Canada

Car loadings in Canada for the week ended October 27 totaled 55,402 as against 56,873 for the previous week and 49,500 cars for the corresponding week last year, according to the compilation of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
October 27, 1934	55,402	19,748
October 20, 1934	56,873	19,663
October 13, 1934	51,560	18,790
October 28, 1933	49,500	19,189
Cumulative Total for Canada:		
October 27, 1934	666,845	43,108
October 28, 1933	617,669	34,119
October 29, 1932	694,280	47,160

SPECIAL PASSENGER RATE REDUCTIONS, amounting to 30 per cent, will be granted this winter by the Swiss Federal Railways and affiliated Postal Motor Coach Services on tickets issued at foreign agencies or tourist offices, according to a recent announcement from the New York office of the Official Information Bureau of Switzerland. The reduction will be in effect from December 15 to April 15, 1935, provided that the tourists remain at least seven days in Switzerland.

Eastman Order in C. & E. I. Rerouting Attacked

A BILL of complaint against the United States, challenging the power of Joseph B. Eastman, federal co-ordinator of transportation, to forbid the rerouting of Louisville & Nashville Dixie trains, from the Chicago & Eastern Illinois between Evansville, Ind., and Chicago, to the Cleveland, Cincinnati, Chicago & St. Louis and the New York Central, was filed in the federal district court at Chicago on November 2, by the Louisville & Nashville and the New York Central. The complaint will be heard by three judges on November 13, the date having been set by Federal Judge Phillip L. Sullivan. The Louisville & Nashville, on September 25, notified the Chicago & Eastern Illinois that the interchange of through passenger train equipment would terminate on October 28. On October 1, Charles M. Thomson, trustee of the Chicago & Eastern Illinois, notified the Co-ordinator of this action, and on the following day the Co-ordinator submitted the matter to the three regional co-ordinating committees for consideration and action. The decision of this committee, favoring the change, was sent to the Co-ordinator on October 18. On October 25, the Co-ordinator issued his order, prohibiting the rerouting. Since the Co-ordinator's order did not become effective immediately and in order to prevent the Louisville & Nashville and the New York Central from placing the plan in effect on October 28, the Chicago & Eastern Illinois sought a temporary injunction to prevent such action, which injunction was signed and entered by Judge John T. Barnes in the federal district court in Chicago on October 26.

In the bill of complaint, the Louisville & Nashville and the New York Central contend there was no contract, rule, practice or law which inhibited the L. & N. from making the change and that there is no intention on the part of the plaintiffs to close any route. [Before the regional co-ordinating committees, the L. & N. and the New York Central proposed a compromise whereby trains known as Chicago & Eastern Illinois Nos. 15 and 16, the principal mail-carrying trains to Nashville and Louisville & Nashville points south, may continue to operate by way of the Chicago & Eastern Illinois between Chicago and Evansville, thereby transferring to the New York Central lines only the through Atlanta-Florida passenger trains.] It also contends that there is no change contemplated, so far as plaintiffs are concerned, in tariffs or in the method of selling tickets or checking baggage. The route from Chicago south and return will be open and available to those preferring to use the C. & E. I. service rather than that of the New York Central. Furthermore, there will be no material inconvenience or substantial delay to those passengers using the C. & E. I. service in either boarding or disembarking from the Dixie trains as Evansville.

Besides contending that the Co-ordinator's report contains many inaccurate statements of facts and omits many facts of unquestioned pertinency fully proven, the bill contends that the Co-ordinator's order was issued without proper hearing and contrary to the findings of the regional committees. It also asserts that the Co-ordinator had no power to sit in review of the action of the co-ordinating committees and substitute his opinion and judgment for theirs.

"The order of the Co-ordinator," the bill continues, "freezes existing service and prevents a change proposed to improve the service to the public and the earning power of the New York Central and the several partners in the Dixie service other than the C. & E. I. Plaintiffs are advised and aver that the right to contract with each other and other railroads to render better public service and to improve their revenues as proposed is protected by the due process clause of the Fifth Amendment, and that the order of the Co-ordinator denying them this right of contract is, therefore, void.

"Due to the deficiencies of the C. & E. I. for some years past, patronage of the Dixie route has largely diminished and public service has suffered. The proposed plan whereby the initial line out of Chicago will be one of the largest passenger carriers in the country which can or will obtain new modern equipment for the Dixie trains will, in the judgment of the traffic experts of the carrier plaintiffs, not only bring back to the Dixie trains the public patronage it has lost but will also develop a new business over this route which has never been enjoyed. The New York Central has existing contracts with the Pullman Company whereby it can and will obtain the finest modern equipment for the Dixie trains. The C. & E. I. has not been able to do this and cannot do it. The New York Central has definitely agreed and is able to carry out this agreement to arrange for the most modern equipment to take the place of the present inferior equipment which is all the C. & E. I. has been able to obtain."

The bill further contends that the Co-ordinator had no power or jurisdiction under the Act of Congress known as the Emergency Transportation Act of 1933 to issue this order, because it relates to a matter submitted by him to the three regional co-ordinating committees for consideration and action and because these committees met to consider fully the matter submitted and by unanimous vote took the action above set forth, specifically approving the proposed change; that the Co-ordinator did not consider all the testimony presented before the regional co-ordinating committees, because a transcript of the evidence was not taken down; that his action under these circumstances constitutes an arbitrary and illegal act so that his order under these conditions violates the due process clause of the Fifth Amendment of the Federal Constitution; that his order being without support of any legal evidence is null and void under the due process clause of the Fifth Amendment to the Constitution of the United States; that his order prohibiting the withdrawal from a contract terminable at will and forcing plaintiffs to continue contractual relations violates the constitutional right of private contract, is directly devoid of statutory basis and is, therefore, illegal under the Fifth Amendment; and that the power sought to be exercised by the Co-ordinator is the power of an owner.

The bill asks that a preliminary or interlocutory order or injunction be entered restraining and suspending the enforcement, operation and execution of the order of the Co-ordinator until final determination of this cause, and that upon the final hearing herein a decree be entered perpetually enjoining, suspending, annulling and setting aside the enforcement, operation and execution of said order. That the United States and the defendent be enjoined and restrained preliminarily until final hearing and perpetually thereafter from and in any manner instituting or authorizing or directing to be instituted any action for penalties or prosecution of proceedings or suit or action incident to, arising from or growing out of plaintiffs' failure to obey said order of the Co-ordinator, and that the order of the Co-ordinator be adjudged, illegal, null and void and that the plaintiffs be not required to comply with the order or any part thereof.

How Rehabilitate the Railroads?

Eastman says railroads, labor, shippers and investors must make "some apparent present sacrifice"

THE rehabilitation of the railroads "is a matter of the most vital importance to the entire country," said Joseph B. Eastman, Federal Co-ordinator of Transportation, in an address before the Atlanta Freight Bureau and other organizations at Atlanta, Ga., on November 6 following one before the Birmingham Traffic and Transportation Club at Birmingham, Ala., on November 5: Such rehabilitation, he said, "will stimulate commerce and industry as few things will, furnish work for capital goods industries which are now lagging behind, and eventually increase the volume of transportation movement in a way which will be of benefit to all agencies of transportation and the labor engaged therein. The railroads are still the great and necessary transportation system of the country. They rank near the top of our key industries, and the time is far distant, if it will ever come, when they will go the way of the canal boat and the stage coach. We all, I believe, want to see the railroads thrive and prosper, for when they are sick the malady does not stop with them but spreads a long way beyond."

He also said that such rehabilitation is both possible and practicable, but that improvements cost money and require credit and "it will require a high degree of co-operation on the part of all concerned, leadership and planning by the government, and the establishment of conditions of greater order and stability in the general transportation situation." The nature of this co-operation was discussed in greater detail in the Birmingham address. At Atlanta Mr. Eastman said in part:

> The new competition has brought the railroad inventor back to life. For many years railroad passenger service moved over the tracks but otherwise stood still. Now a tidal wave of improvement seems about to sweep on the scene. It has been found that the plague of smoke and dirt can be abated and a comfortable temperature maintained in the cars in both winter and summer It has also been found that the seats can be greatly improved. And now the fast, Diesel-electric, stream-line air-conditioned trains have made their appearance. They are only a forerunner of what is to come.

Improvements Needed in Freight and Passenger Equipment

There are some dangers in the situation. The fast, stream-line trains have struck the public fancy. They are a splendid manifestation of new enterprise. Undoubtedly they have their place. But their first cost is now very high and must come down, and there is a great amount of passenger service to which these costly trains are not well suited, but to which other possible improvements, which are in some danger of being neglected, would be very well adapted. I refer to the development of light-weight, speedy car units operated by low-cost motors and able to provide a cheaper and more flexible and frequent service on the branch and secondary lines. It would be a blunder for the railroads to engage in the same old competitive fight and plunge into the buying of rival stream-line trains regardless of the real needs of the traffic and of any adequate plans for co-operation and co-ordination in the furnishing of service.

It would be a blunder of even greater magnitude to neglect the large opportunities which seem to be opening up for improvement of equipment and service in the handling of the freight traffic, which has always been of far more importance from the standpoint of railroad revenues than the passenger traffic. The director of my Section of Transportation Service, Mr. Turney, summed it up in this way:

> The ideal freight car, not of the future, not of tomorrow, but of today, is one light enough to carry five times its weight; strong enough to drag one thousand times its weight; versatile enough to handle any commodity in any weather or temperature; insulated, coolable and heatable, adaptable in size to present-day sales unit requirements, providing security for person and property; dependably speedy in terminals as well as on the road; accessible for loading and unloading from any one of its six sides; and finally attaining both mobility and utility by being quickly and cheaply transferable from rail to highway chassis vertically, longitudinally and laterally.

Many railroad men will say that this is a pipe dream. Perhaps it is, but where is smoke there is apt to be fire. Mr. Turney may see visions and not all he sees may come true, but "where there is no vision the people perish." The railroads have the general attitude toward some of our surveys of the man from Missouri. It is a natural attitude with which I have no disposition to quarrel. Nothing is sound which will not stand the test of close scrutiny and criticism. Nevertheless I feel confident that our surveys, which to a large extent are being made by the railroads themselves, will stimulate thought and activity, and in the end produce some very practical and beneficial results.

However—and here comes the sting at the end of the tail—improvements in equipment and service cannot be made by impecunious roads, except to the extent that the federal government is willing to act as a fairy godmother. That is why it is essential that every practical and reasonable means be adopted to bring down costs of operation, quite apart from such improvements. They can be brought down, as I believe we shall be able to show, by greater co-operation and co-ordination of effort, but it will require co-operation, not only on the part of the railroads with each other, but on the part of labor, shippers, investors, communities, and the country as a whole. There will be some things in the program which various parties in interest will not like for one reason or another. But the country has got to make a choice between a railroad industry which has in it the elements of life and growth and one which has in it the seeds of decay, between one which can forge ahead and one which will continue to slip back. And when I say the "country," I mean the railroads themselves, and labor, and the shippers, and the investors, and the communities. To place the industry in a position where it can forge ahead may involve some apparent sacrifice, the degree of this sacrifice being dependent upon the general state of business conditions. If conditions become sufficiently favorable, there may be no sacrifice at all. But in any event the goal ahead is worth the sacrifice and much better for all concerned than what is likely to happen if no sacrifice is made.

Speaking at Birmingham Mr. Eastman had outlined some of the difficulties involved in making the reductions in costs without co-operation on the part of all concerned, saying:

Improvements Require Credit

You have seen or heard of the Diesel-electric, stream-line, light-weight, air-conditioned trains which certain railroads are now testing out. In my judgment these are only the advance guard of the improvements in railroad equipment and service which will soon be marching on the scene, if they are given a fair chance. But do not forget that such improvements cost money and require credit and do not forget, also, that the maintenance of the railroads is now heavily in arrears and must be made good. That is where the need comes in for every practicable and reasonable reduction in costs of operation.

Nor should any one have the idea that these reductions in costs, which are well within the range of possibility and practicability, will be welcomed on all hands and be easy to bring about. Let us look at it, first from the railroad point of view.

The Railroad Point of View

While the railroads do together constitute a national system of transportation, the immediate duty of the individual management is to promote the welfare of its own particular railroad or system. Since railroads are in competition at the more important points and for the more important traffic of the country, their individual interests are often adverse or conflicting, or at least they seem so to be on the surface. The principal executive officers have grown

up in the business, and this idea of conflicting interests is ingrained and predominant. Their habit of mind is intensely individualistic and suspicious of collective action. When such action is proposed, although it may plainly be for the good of the industry as a whole, the normal railroad executive will at once seek to determine how it may affect his railroad in comparison with others. It is easy for him to fear that it will have an adverse effect from that point of view, and if he does, down goes his thumb on the proposition. He is particularly suspicious of any collective proposal which has a nation-wide aspect, for he sees in it a tendency towards "nationalization" of the railroads, or at all events a decrease in the importance of the local managements. I am not complaining of these habits of mind, for they are very natural and to some extent necessary. I am merely stating the facts.

Railroad labor will find grounds of dissatisfaction, for duplications and wastes in railroad operation give employment which will cease if they are eliminated. I shall have more to say about the labor situation a little later on. Many communities will oppose, because they will fear that the importance of railroad lines on which they are located may be diminished or that they may be deprived of certain railroad shops or like facilities. Some large shippers will oppose, because they will fear that through greater co-operation and co-ordination on the part of the railroads they may lose various special advantages which they have been able to extort by playing one railroad against another.

Now it seems to me that the railroads and labor and shippers and the rest of the country have a plain choice which they will have to make. We are trying to supply them with the facts on which to make that choice, but we can not make it for them. If I apprehend the situation correctly, the railroads have been slipping badly and are in danger of continuing to slip. If they are to move forward and thrive, they will have to gird up their loins and get rid of all useless "impedimenta," as Julius Caesar used to say. If they do this, they will then have a chance to rehabilitate their equipment and their service and their rates and gain new traffic which will at length enhance their prestige and mean more employment. If they do not do this, they are very likely to lose still more of what they now have.

Initial Sacrifice Necessary

If you have ever played chess, you know that often the way to victory is opened up by making an initial sacrifice of a piece. Here, as I see it, is a place for somewhat similar tactics. Take passenger traffic. The automobile has created a tremendous pool of travel. Stated in terms of passenger-miles, this travel probably has a volume four or five times as great as the railroads ever handled in their history. If the railroads can by meeting the cost and service needs of the public tap and draw off only a small part of this pool, it will vastly improve their position. But if the railroads are to invade this field with any profit, they must get their costs down and modernize their equipment. The same principle applies to freight service. Bear in mind that I am not proposing a cut in costs at the expense of service. On the contrary every step in the suggested program leads up to better service.

The Labor Problem

The labor problem is the most difficult of all to solve. In recent years the total number of men engaged in transportation has considerably increased. Omitting local trucking entirely, the intercity trucks now use at least as many men as the railroads. But railroad labor has suffered very severely, not in wage rates, but in employment. No one with any heart can under present conditions contemplate a further reduction in railroad labor except with the most serious misgivings. Yet the railroad industry is in no position to furnish unnecessary or wasteful employment, and if it continues to carry such a load, it is very likely to lose the opportunities which in the end will mean more traffic and more employment. The choice is between a live and growing industry and one which carries the germs of decay. I would say the same if the railroads were publicly instead of privately operated, for the outside competition would still exist, and no government can afford to operate an industry on a subsidized basis or except in accordance with sound business principles.

Rehabilitation of the railroads furnishes, I thoroughly believe, a great opportunity for stimulating commerce and industry, and railroad labor will in the end profit along with the rest of the country from such rehabilitation. The first step, however, is to place operation on the most economical and efficient basis. At the same time I would protect railroad labor in two ways. In the first place, a sound pension act is essential to the good of the industry. If the present act proves unsound, one that is sound can be provided. The industry needs this relief from superannuation, which is fast becoming a serious evil. It will thrive much better with a larger percentage of young blood, and retirements made in this way will materially lessen the need for retirements in connection with economy projects. In the second place, those who are displaced by such projects are entitled to protection through dismissal compensation, which will begin where pensions leave off and be graded in accordance with age, length of service, and present wage rates. Such compensation is not an untried device, but has been used with advantage both here and abroad.

Such measures for the protection of labor will prevent the railroads from realizing at the outset the full benefits of economy projects, but they will be left with substantial benefits which will continually grow as time goes on. The protection is no more than justice to labor requires, and in the end the results for the railroad employees will, I confidently believe, be far better than if the industry is permitted to drift with the present tide. For example, I look forward, as improvements are made, to an increased frequency and mobility in railroad service, both passenger and freight, which will provide large opportunities for labor.

The Investor's Part

The case of railroad investors is very like that of labor. Investors have suffered severely, from suspensions of dividends and and from defaults in many interest payments. Yet railroad indebtedness constitutes a burden which is very heavy under present conditions and which is very damaging to future credit. If credit under private operation is to meet the needs of the situation, a large part of that indebtedness must be translated into a form which will carry with it no fixed interest obligations. In other words, investors, like labor, must make some apparent present sacrifice for the rehabilitation of the railroads, and thus help them reach a future position which it will otherwise be impossible to attain.

Recommendations for Regulation of Other Carriers to be Continued

Referring to his recommendation of last March for the co-ordinated public regulation of all forms of transportation by a single federal agency of all important forms of transportation, and discussing that subject at length, Mr. Eastman said he would continue to recommend it at the coming session of Congress and that "it is a pleasure to find that recognition of these facts is growing all over the country."

I find very few experienced and responsible operators of any form of transportation who do not favor regulation of some kind and by the federal government. I find the same sentiment developing among the business men of the country. Already it has borne fruit in most of the states, and they are with one accord appealing to the federal government for aid. The main question seems to be as to the form which federal regulation should take. The time has come for the central government to assume the leadership, promote order and stability in the field of transportation, and undertake to work out a national system of transportation which will meet the needs of the country with the least possible duplication and waste and furnish service at rates which will stimulate the free interchange of commodities.

If such regulation is to produce co-ordination, it must itself be co-ordinated, and this means a single regulating authority instead of several working at cross purposes. The logical body for this work is the Interstate Commerce Commission, which has had an honorable record for nearly 50 years, and can be depended upon to do the job without fear or favor. It may need some measure of change in make-up and organization to perform the new duties in the best possible way, but that, I am sure, is a problem which can be worked out without undue difficulty.

Let me in closing say that I find the keenest interest throughout the country in the transportation question, and quite generally a most reasonable attitude towards it. The vital importance of a sound railroad industry is recognized. The railroads still form the great, essential transportation systems of the country. No one wants to pull them down, and all would like to help them up. At the same time it is recognized that the other transportation agencies have their place, and no one who uses them wants to pull them down. The feeling, as I sense it, is that a situation exists which calls for action, and that the government must take the lead in promoting order, stability, co-operation, and genuine progress, and in staving off a general demoralization which certainly threatens if it is not already here. If we all pull together, I believe that is precisely what can be done.

Mr. Eastman also said that his report on the handling of passenger traffic will be out in the near future and that the report on the handling of carload freight ought to be ready shortly after the end of the year.

Spring Switch on the Great Northern

Installation with mechanical facing-point lock at Willmar, Minn., includes special signaling — Eliminates about 2,190 train stops annually

A Mechanically-Operated Facing-Point Lock Is Used

A SPRING switch with a mechanical facing-point lock has been installed by the Great Northern in its main line at the west end of the yard at Willmar, Minn., 102 miles west of St. Paul. Westbound freight trains leaving the yard use this turnout to enter the main line. Prior to the installation of the new switch, it was necessary for most of these trains to stop to allow a trainman to run ahead and open the switch. Likewise, as the trains average 100 cars each, it was necessary for them to stop after they were out on the main line to permit a trainman to close the switch and board the train. To eliminate these stops, totaling about 2,190 annually, the spring switch was installed.

It is of interest to note that although the Great Northern has had a spring switch in service in a yard at St. Paul since 1931, the idea of using such a device without a facing-point lock in main tracks has not been looked on with favor, and it is probable that a spring switch would not have been installed at Willmar except for the fact that the facing-point lock arrangement was developed, to afford the same protection for a spring switch as for an interlocked switch.

The Spring Switch Is Protected by Special Signal

The unusual feature in connection with spring-switch installations on the Great Northern is the use of a lunar-white signal. As may be seen in the illustrations, a two-unit high signal is located at the switch to the right of the main track for the normal direction of traffic and a two-unit dwarf is located to the right of the track for reverse traffic. The top unit in each of these signals is set up to show lunar white normally, indicating that the switch is normal and locked. This aspect corresponds to the green light on an ordinary hand-throw switch stand. In case the switch is not in the full normal position or the lock is not in the normal position, the lunar-white light is extinguished and the lower red light is illuminated, indicating "stop." After a train on the main track has been stopped by such a signal, the switch must be inspected to make certain that it is properly set for the main line, after which the train may proceed according to Great Northern Rule 509b, reading as follows:

"When a train is stopped by a Stop and Proceed signal, it may proceed at once at a speed not to exceed 8 miles per hour, expecting to find a train in the block, a broken rail, an obstruction, or a switch not properly set. When it is not positively known that another train is in the block, all switches should be examined before passing over them."

It should be noted that the spring-switch signal is controlled exclusively by the position of the switch and lock. The important point is that the spring-switch signals are not track-circuit controlled and are, therefore, not a part of the automatic block signaling. The position of the spring switch does, however, control the automatic signals for if the switch is not in the normal position or if the lock is not normal, the track circuit

on the main line is shunted. The line-control circuits of the automatic signals, of course, are not broken through the circuit controllers at the spring switch.

In view of the fact that the switch is equipped with a facing-point lock and that signals are provided at the switch to check the position of the switch and lock, it is believed that the layout is protected as fully as any interlocked switch, and, therefore, the Great Northern considers that no special speed restrictions are necessary over the switch. For outbound movements from the yard trailing through the switch to the main track, the train speed is limited to 15 m.p.h., while the locomotive is pulling through the switch, the thought being that at higher speeds the force extended in moving the switch points against the spring pressure of about 1,000 lb., at a leverage of about 10 ft. might be injurious to the switch layout and mechanism. However, after the switch points have been moved over, there is no occasion to hold the speed to a minimum. In fact, the less the points move back against the oil-buffer pressure, between the passing of the trucks of cars, the better. Therefore, after the locomotive is out on the main line, the speed can be increased to normal as desired by the engineman.

The rail through the spring switch is 90 lb. and the turnout is a No. 11, the switch points being 16 ft. 6 in. long, reinforced with 1¼ in. by 2½ in. bars riveted in place. Before installing the new equipment, new 8-in. by 10-in. sawed ties were placed under the switch layout. Insulated gage plates ¾-in. thick and 7 in. wide were used on the first two ties under the points, these plates extending to the lock mechanism. A similar plate was used on the fifth tie, the plate extending to the crank. The front rod is of special heavy construction, ¾ in. by 2 in., designed especially for spring switches. The facing-point lock mechanism is the Union Switch & Signal Company's Model S-1, while the spring and piston are the Pettibone-Mulliken Company mechanical-switchman type.

Freight Rate Hearings

HEARINGS on the application of the railroads for increased freight rates, Ex Parte 115, were held at Salt Lake City, Utah, on October 29-30, and at Portland, Ore, on November 2, 3 and 5. While the Salt Lake hearing was scheduled to occupy three days, Commissioner Aitchison was able to complete the presentation of evidence in two days. In order to facilitate the presentation of evidence at Portland, the testimony was presented at two hearings, one conducted by Commissioner Aitchison and the other by Examiner Stillwell. At Salt Lake, evidence was presented by representatives of agricultural, livestock, poultry, potato, woolgrowing, coal, sugar and manufacturing interests, while at Portland, fruit and grain interests presented their testimony. F. A. Cleveland, general freight agent of the Northern Pacific, was placed on the stand at Portland to present additional carrier evidence.

Witnesses at Salt Lake endeavored to show that any increase in freight rates will decrease railroad traffic and the production of commodities, and that the financial condition of producers and shippers is such that they cannot stand increased freight rates. Paul A. Eke, professor of agriculture at the University of Idaho, pictured the plight of the farmers, saying that 75 per cent of all privately owned rural lands in Idaho were delinquent a year after the 1932 taxes were due and that not until farmers have a series of good crops that will sell on a higher market will they be able to pay increased freight rates. Similar testimony was submitted by C. L. DeLong, representing the potato industry; Austin Anson, secretary and manager of the Idaho Shippers' Traffic Association; M. C. Claar, secretary of the Idaho Wool Growers' Association; J. R. Fields, an Idaho fruit producer; Elbert Campbell, a cattle raiser; and L. C. Jones, traffic expert of the Public Utilities Commission of Idaho.

B. P. Manley, executive secretary of the Utah Coal Operators' Association, contended that railroads had already lost considerable business because of high freight rates and that an increase would probably divert more of the business to trucking companies. He recommended that the carriers reduce their rates to regain the coal business lost to trucks. Others opposing an increase in freight rates were Charles E. Blaine, traffic counsel of the American National Livestock Association: E. L. Fischer, traffic manager of the Amalgamated Sugar Company; H. W. Ansell, assistant traffic manager of the Utah-Idaho Sugar Company; Herbert Beyers, secretary and general manager of the Northwestern Turkey Growers' Association; I. H. Jacobs, manager of the Wasatch Livestock Loan Association; James A. Hooper, secretary of the Utah State Woolgrowers' Association; C. Clarence Nelsen, assistant state manager of the Home Owners' Loan Corporation; E. C. Corey, assistant manager of the Farmers' National Grain Company; E. R. Alton, director of the Ogden Grain Exchange; and R. I. McDonough, traffic manager of the Utah Poultry Producers' Co-operative Association.

At Portland, the testimony of the fruit and grain interests was to the same effect, namely; that farmers are so badly in debt now that any other expenses, such as increased freight rates, would bankrupt and put many of them out of business; that the granting of the increases would decrease the purchasing power of farmers; that counties in Northwest states, which are almost entirely dependent on the fruit and grain industries, have heavy tax delinquencies and cannot afford to have an additional burden placed on the farmers.

R. D. Lytle of the North Pacific Millers' Association contended that any increase in freight rates will stop the movement of wheat, so far as the railroads are concerned. H. B. Schaefer, traffic advisor of the Montana Railroad Commission, testified that under present conditions, existing rates are too high. Ivan L. Plette, manager of the Yakima Valley Traffic & Credit Association, said the fruit industry has suffered, while in many cases freight rates have been paid out of loans received and not from the returns of the product itself. W. J. Looker, attorney and secretary of the Rogue River Valley Traffic Association, said that in Jackson (Ore.) county, tax delinquencies amounted to $120,000 prior to 1930 but increased to $432,925 by 1932. Bert L. Baker, secretary-manager of the Wenatchee Valley Traffic Association, showed that box apple shipments have decreased 9,200 cars from 1930 to 1933, due to the financial condition of growers.

C. R. Lonergan, chief of the traffic division of the Washington Department of Public Works, contended that freight rate increases would divert more business to the trucks. According to his figures, there are 60,400 licensed trucks on the Washington highways at the present time. He also stated that the railroads have been cutting rates in recent years to compete with the trucks and are now trying to raise those same rates. Roy W. Ritner, director of the North Pacific Grain Growers' Association, declared that wheat should not have to stand for the losses on passenger traffic.

Electrical Section Meeting

A summary of the 1933 and 1934 reports and the discussion following their presentation

THE Electrical Section, American Railway Association, held its annual meeting at the Bellevue Stratford hotel, Philadelphia, Pa., on October 25. No meeting was held in 1933, and discussions covered committee reports for the past two years. The meeting was conducted by Chairman J. V. B. Duer, electrical engineer, Pennsylvania. Features of some of the '33 and '34 reports and the discussion are included in the following; abstracts of the remainder will be published in a subsequent issue.

Inductive Co-Ordination

The reports on inductive co-ordination were presented by S. Withington, electrical engineer, New York, New Haven & Hartford. These reports covered the effect of electrification power circuits and equipment on communication circuits, as they exist in the territory traversed by the Chicago, Milwaukee, St. Paul & Pacific, and with inductive co-ordination worked out in connection with the Reading Company's Philadelphia suburban electrification. The report also includes a review of a technical study on this subject, published in a series of bulletins published by the Oerlikon Company. Another function of the committee is to arrange for co-operation with the Bell System, the Edison Electric Institute and the Telephone and Telegraph Section of the A.R.A.

Concerning the C. M. St. P. & P., the report states that the interference problem, as related to the communication circuits of the railway, has been one which has been capable of quite simple and satisfactory solution. Concerning the Reading electrification, the report states that, to date, the only telephone troubles caused by short circuits have been cases of false bell ringing. Neither operation of trains nor short circuits has caused interference with normal operation of the railroad communication lines and there has been no report of acoustic shock. There was no discussion.

Power Supply

The power supply reports were presented by G. I. Wright, chief electrical engineer, Reading. These reports are concerned with the general subjects of steam and water power available for traction and general purposes, internal combustion engine power supply and with the specific subjects of power supply for air conditioning, pre-cooling of cars and power for parked Pullman cars. It is shown that power consumption for the year 1933 increased 2.7 per cent as compared with 1932, including an increase of 1.8 per cent generated by water power, an increase of .9 per cent by coal power and an increase of 2.7 per cent in that produced by fuel oil. Concerning Diesel power for traction purposes, reference was made to a 3600-hp. locomotive, having two 1800-hp. cabs, each equipped with two 900-hp. engines, now being built for the Baltimore & Ohio.

For pre-cooling purposes, the committee recommends 220-volt three-phase 60-cycle power to be supplied to the cars through plugs and receptacles of a design similar to that developed by the Pyle-National Company. Connections are recommended to provide clockwise rotation of the standby motors, when facing the end of the motor opposite the drive.

Discussion: A letter by P. Lebenbaum, Southern Pacific, was read, in which the writer disapproved of standardization of plugs and receptacles, since air conditioning is in a state of flux. This opinion was approved by H. C. Griffith, assistant electrical engineer, Pennsylvania. Mr. Wright said this raised the question as to whether the association should be a recorder, or a leader of opinion and development. He said that 220-volt three-phase services are widely used and there is need for interchangeable plugs and receptacles. S. Withington, electrical engineer, New York, New Haven & Hartford, expressed the opinion that the association should be governed by whether or not existing patents allow only one manufacturer to make the connectors. He added that some standby voltage is vital, whether it is most efficient or not.

G. W. Bebout, electrical engineer, Chesapeake & Ohio, informed the members that plugs and receptacles having the same specifications were also manufactured by the Albert & J. M. Anderson Manufacturing Company. He stated that the operation of connectors of this type is highly satisfactory and that it was not likely that greater capacity will be needed.

It was suggested by J. M. Trissal, electrical engineer, fixed property, Illinois Central, that the wording of the committee's recommendation should be changed to include 208-volt, as well as 220-volt systems. To this, Mr. Bebout replied that, while the motors would run on 208 volts, the starters would have to be changed to allow for the increased starting current. The need for universal type of power supply which can supply continuous power to any cars at all times was voiced by J. H. Davis, chief engineer electric traction, Baltimore & Ohio.

Application of Electricity to Railways

The 1933 report consists of a comprehensive bibliography of periodical articles in current North American publications, on applications of electricity to railways. The 1934 report brings this bibliography up to date and extends it to include a selective list of periodicals published in foreign countries. D. J. Brumley, chief engineer, Chicago Terminal improvements, Illinois Central, presented the report.

Discussion: Attention was called by Mr. Withington to bibliographies compiled in previous years by what is now the American Transit Association. These, he said, form a valuable supplement to the compilation made by the Electrical Section.

Electrolysis

The committee's work during the last two years has centered largely around an investigation of non-metallic sheathed cables for use as electrical conductors underground. Mention is made of applications on the Baltimore & Ohio as a third rail feeder, on the Chicago, Milwaukee, St. Paul & Pacific for small lighting projects, on the New York Central as air conditioning power

supply circuits, and on the Reading for the operation of signal power, low voltage signal circuits and bonding connections for traction circuits. The reason for this investigation is that soil conditions are particularly adverse in railroad yards to metallic covering, and electrolysis mitigation is undoubtedly a factor in the adoption of this type of cable. As used by electric light and power companies, "low cost seems to be the major reason for its installation." The report was presented by H. C. Cross, Pennsylvania Railroad, who stated that it was the wish of the committee to have item 2 in its assignment clarified. This assignment, as published in the report, reads as follows: "Promotion of co-operation in each individual district between the various owners of underground metallic structures." The committee of direction has revised this to read: "Report on co-operative methods which have been used in various parts of the country, in co-ordinated studies of electrolysis problems."

Standardization of Apparatus and Materials

C. P. Martin, transmission engineer, New York Central, presented the report of the committee on standardization of apparatus and materials. This committee has completed specifications for friction tape for special service, friction tape for general service and rubber insulating tape. This work has been in progress since 1924, with the result that the A.R.A. and A.S.T.M. standards for friction tape now coincide.

Discussion: Mr. Withington stated that the section has been fortunate in having the services of Mr. Martin on this work, since he has succeeded in obtaining tape standards which provided the railroads with a high grade and satisfactory tape, obtainable at minimum cost. Mr. Bebout suggested that the manufacturers should grade tape so that the railroads would know when they were buying the tape that meets the standards.

Electric Heating and Welding

In its recent activities this committee has concerned itself with electric snow-melters and electric welding equipment as applied to maintenance of way work, principally that located at points where commercial power is not available. The report was presented by J. M. Trissal, electrical engineer fixed property, Illinois Central. The report states that in nearly all cases the use of electric snow-melters was found to keep the switches clear without any supplementary help. Some trouble was experienced, however, during snow storms which were accompanied by high winds. In these cases, some manual sweeping was found to be necessary. All companies, with one exception, consider the wattage per pair of points they are using to be sufficient; the average is 11,000 watts. One company reports that on any new installations it would increase the wattage per pair of points from 5,000 to 7,000. The Illinois Central has offered figures on costs which compare the cost of operating electric snow-melters with that of Storm King oil pots, for an individual storm. Figures given in a table show electric operation to cost $2.42 per pair of points, while the cost with the oil pots was $6.93 per pair of points. Concerning the relative merits of alternating and direct current welding machines, the report states that if one type of welding is superior to the other, the superiority rests with the direct-current machine, there being little difference between the two types of equipment, in so far as first costs and operating costs are concerned. The committee favors inherently regulated welding equipment, as compared with constant voltage, because the latter is heavier and less efficient.

The report states, that, if it is anticipated that power may be required for the operation of lights, grinders and other tools, in connection with the welding operation, an auxiliary generator should be provided. Auxiliary equipment, it is said, does not give entirely satisfactory performance when operated from the welding generator. The report adds that, if this type of equipment is provided, electric grinders are more satisfactory than gasoline-driven grinders, because they are lighter and more portable, can sustain over-loads, have low maintenance cost, are not difficult to start in cold weather and have accurately controllable speeds.

For choosing the size of a gasoline engine to drive a welder, it is suggested that the maximum rated output of the generator should be divided by its efficiency, and that this figure should be converted to horsepower with 50 per cent added for reserve.

In the opinion of the committee, the success which a welding gang may have is, in a large measure, dependent upon the efficiency of the accessories used. With this in mind, the committee describes welding cable, suitable reels, rail clamps, cable connectors and various types of portable welding machines. There was no discussion.

M. P. "Calf or Carload" Plan

IN the years 1932 and 1933, there was a decrease of 12,000 cars in the movement of livestock on the Missouri Pacific. A careful study of the actual needs of the livestock farmer in southeast Missouri for the transportation of his stock to market showed that the stock was moving in l.c.l. lots, mostly by trucks, except in one or two instances where the local buyers and local co-operative live stock associations were assembling the stock in order to make up minimum carloads. Beginning November 1, 1933, the Missouri Pacific tried out a plan to handle l.c.l. livestock in any quantities in a local freight train each Wednesday from the Belmont branch to the National Stock Yards. The plan was so satisfactory to both the farmers and the railroad that the service was extended on March 2, 1934, to include all of the Missouri division and the Doniphan branch on the Arkansas division. During the first nine months of this experimental operation, the following livestock was handled from the Missouri division to St. Louis: 1,038 cattle, 2,216 calves, 7,928 hogs and 736 sheep, or a combined total of 186 carloads.

The same service was begun on the Eastern division on July 1, 1934, and, in the first month, 417 cattle, 724 calves, 1,509 hogs and 815 sheep, a total of 77 carloads, were handled. This service of handling livestock in any quantities offered on local freight trains has proved most satisfactory, and has been provided without increasing train service.

Because of the trucks handling livestock direct from the farm to the market the local buyers of former days had practically passed out of the stock shipping picture, and this method of shipping was having a serious effect, too, on the local co-operative livestock shipping associations. The new service enables both of these stock buying agencies to resume their activities, particularly since the fear of being caught with only a portion of a carload is now removed and the association or buyer can move any quantity he has on hand promptly. It also enables farmers to move small quantities at a rate that is, in general, lower than the truck rate.

A further important feature is the fact that with the movement by rail, many trucks did not go to market, and, as a result, did not handle merchandise on the return trip at any rate they could get.

Western Railroads to Air-Condition 2,500 Cars for 1935

A PROGRAM calling for the air-conditioning of 2,500 passenger cars for the 1935 summer season has been agreed upon by 21 western and southwestern railroads. While the program undertaken last year was confined to the installation of air-conditioning equipment in dining, cafe and club lounge, observation and room cars, the restrictions agreed upon by western carriers last year have been removed this year so that entire trains, including coaches, chair cars, parlor cars, sleeping cars, lounge cars, observation cars and dining cars, will be air conditioned. Every through train of any importance which is operated in western territory will be air conditioned throughout.

The railroads and the number of cars to be air conditioned are as follows:

Railroad	Number of Cars Railroad-Owned	Pullman-Owned	Total
Alton	Number not definitely decided		
Atchison, Topeka & Santa Fe	78	195	273
Chicago, Burlington & Quincy	51	59	110
Colorado & Southern	13	14	27
Chicago & Eastern Illinois	Number not definitely decided		
Chicago & North Western	Number not definitely decided		
Chicago, Milwaukee, St. Paul & Pacific	50	53	103
Chicago, Rock Island & Pacific	44	71	115
Denver & Rio Grande Western	32	36	68
Great Northern	Number not definitely decided		
Illinois Central	Number not definitely decided		
Louisiana, Arkansas & Texas	5	4	9
Missouri-Kansas-Texas	Number not definitely decided		
Missouri Pacific	Number not definitely decided		
Northern Pacific	49	52	101
St. Louis-San Francisco	30	43	73
Southern Pacific	Number not definitely decided		
Texas & Pacific	45	30	75
Union Pacific	91	120	211
Wabash	14	15	29
Western Pacific	Number not definitely decided		
	502	692	1,194

The trains on which air-conditioned equipment will be operated are as follows:

Alton

Alton Limited
The Mail
The Lincoln Limited
Trains 5 and 6
Midnight Special
Prairie State Express
The Hummer
The Nighthawk

Atchison, Topeka & Santa Fe

The Chief
California Limited
Grand Canyon Limited
Navajo
Trains 27 and 28 between Kansas City and Ft. Worth
The Ranger
Trains 15 and 16 between Kansas City and Texas
Trains 47, 48, 49 and 50 between Kansas City and Tulsa
Trains 47 and 42 between Phoenix and Ash Fork
Trains 23 and 2 between Barstow and Oakland
Trains 11 and 12 between Bakersfield and Oakland
Trains 25 and 26 between Wichita and Amarillo
Train 22 from Los Angeles to Kansas City (tourist sleeper only)
Trains 13 and 14 between Denver and El Paso
Trains 94 and 95 between Amarillo and Dallas

Chicago, Burlington & Quincy

Aristocrat
Ak-Sar-Ben
Fast Mail
Blackhawk
American Royal
Empire Builder
North Coast Limited
Nighthawk
Trains 2 and 3 between Chicago and Denver
Trains 3-41 and 42-2 between Chicago and Sheridan
Trains 17 and 16 between St. Louis and St. Joseph
Trains 15 and 14 between St. Louis and Denver
Trains 15 and 12 between St. Louis and Minneapolis
Trains 27 and 26 and trains 22 and 23 between Kansas City and Omaha
Trains 41 and 42 between Kansas City and Billings and Cody
Trains 29 and 30 between Denver and Billings and Cody

Colorado & Southern

Trains 1 and 2 and 7 and 8 between Denver and Texas

Chicago & Eastern Illinois

All trains between Chicago and St. Louis

Chicago & North Western

Los Angeles Limited
Overland Limited
Portland Rose
Pacific Limited
Mountain Bluebird
The Nightingale
Northwestern Limited
The Viking
The Victory
Corn King Limited
Rochester Minnesota Special
Trains 515-503-411 and 412-514 between Chicago and Rapid City, S. D. (sleepers only)
Trains 117 and 102 between Chicago and Green Bay (sleepers only)
Trains 15 and 16 between Chicago and Cedar Rapids (sleepers only)
Trains 17 and 22 between Chicago and Des Moines (sleepers only)

Chicago, Milwaukee, St. Paul & Pacific

Olympian
Pioneer Limited
Arrow
The Day Express
The Soo
Train 12 from Milwaukee to Chicago
Train 56 from Minneapolis to Chicago

Chicago, Rock Island & Pacific

Golden State Limited
The Apache
Rocky Mountain Limited
Hot Springs Limited
Memphis Californian
Trains 207 and 210 between Chicago and Peoria
Trains 208, 209, 213 and 230 between Chicago and Peoria

Denver & Rio Grande Western

Panoramic
Scenic Limited

Great Northern

Empire Builder

Illinois Central

Panama Limited
The Hawkeye
All trains between Chicago and St. Louis

Missouri-Kansas-Texas

No information

Missouri Pacific

Sunshine Special and Louisiana Sunshine
Texan
Scenic Limited and Southern Scenic
Southerner
Sunflower
The Star
Tennessean-Hot Springs Special
Missourian
Trains 219 and 220 between Memphis and Hot Springs
Trains 15 and 16 between St. Louis and Kansas City
Trains 119-112, 105-106 and 109-110 between Kansas City and Omaha and Lincoln
Trains 9 and 10 between New Orleans and Houston
Trains 5 and 6 between New Orleans and New Mexico

Northern Pacific

North Coast Limited
Yellowstone Park Special

St. Louis-San Francisco

Trains 1 and 2 between St. Louis and Texas
Trains 7 and 8 between St. Louis and Texas
Trains 5 and 10 between St. Louis and Springfield
Trains 9 and 10 between St. Louis and Oklahoma
Trains 9 and 4 between Chicago and Oklahma
Trains 103 and 104 between Kansas City and Memphis
Trains 105 and 106 between Kansas City and Memphis and Birmingham
Trains 111 and 112 between Kansas City and Tulsa
Trains 117 and 118 between Oklahoma and Texas
Trains 309 and 310 between Monett, Mo., and Wichita, Kan.
Trains 409 and 410 between Oklahoma City and Quanah
Trains 609 and 610 betwen Tulsa, Okla., and Vernon, Tex.
Trains 709 and 710 between Monett, Mo., and Paris, Tex.
Trains 805 and 806 between St. Louis and Memphis
Trains 807 and 808 between St. Louis and Memphis

Southern Pacific

Overland Limited
Golden State Limited
San Joaquin
Apache

Southern Pacific (Continued)

Sunset Limited
Cascade
West Coast
Owl
SP de Mexico
Sunbeam
Daylight
Sunset Mail

Trains 3 and 4 between Houston and Chicago via New Orleans
Trains 17 and 18 between New Orleans and Denver

Texas & Pacific

Train 16 between Texas and Memphis and St. Louis
Train 26-716 between Texas and New Orleans
Train 715-21 between New Orleans and Texas
Trains 3 and 4 between St. Louis and Texas
Trains 23 and 24 between New Orleans and Texas
Trains 6 and 7 between St. Louis and El Paso
Trains 207 and 8 between St. Louis and San Antonio

Union Pacific

Los Angeles Limited
Overland Limited
Portland Rose
Columbine
Mountain Bluebird
Pacific Limited
Pony Express
St. Louis-Colorado Limited
Kansas City Express
The Spokane

Wabash

All trains between Chicago and St. Louis
Trains 3 and 12, 9 and 2 and 17 and 18 between St. Louis and Kansas City
Trains 11 and 14 between St. Louis and Omaha, St. Louis and Des Moines and St. Louis and Minneapolis
Trains 12 and 13 between Chicago and Decatur

Western Pacific

No information

Strengthening of Demurrage Bureaus Urged

WASHINGTON, D. C.

ASSERTING that the matter presents opportunities for substantial net savings to the carriers, Co-ordinator Eastman on November 3 addressed a statement to the Regional Co-ordinating Committees urging a more thorough consideration of a series of recommendations designed to bring about better supervision of the application of demurrage and storage rules throughout the country and a strengthening and reorganization of the railroad demurrage and storage bureaus. In thus bringing the subject for the second time to the attention of the committees Mr. Eastman said that the adequate enforcement of these rules "is plainly a matter which may be and is adversely affected by the competition between the carriers and which therefore cannot safely be entrusted to the staffs of the individual railroads," and that the report of the general committee of the American Railway Association, to which the earlier recommendations were referred, "is lacking in adequate discussion of the subject matter under consideration, and is largely confined to a skeleton statement of conclusions and recommendations." He also said that the "indefinite and ineffective character of many of the recommendations" is pointed out in an attached memorandum prepared by C. E. Bell, his executive and traffic assistant.

On April 5 Mr. Eastman had addressed a letter to the regional committees transmitting a memorandum prepared at his request by Director Bartel of the Bureau of Service of the Interstate Commerce Commission and approved by Director Hardie of the Bureau of Traffic and Director Bonneville of the Bureau of Inquiry, containing recommendations designed to secure better supervision of the application of demurrage and storage rules. The matter was referred by the co-ordinating committees to the general committee of the American Railway Association, and at length it made a report, which was submitted to Mr. Eastman on September 24, October 9, and October 22, respectively, by the Southern, Eastern, and Western committees, with statements to the effect that the recommendations made therein had been approved and steps would be taken to bring about their consummation. This report from the general committee has since been analyzed for the Co-ordinator by M. Bell, who prepared a new memorandum of which the statements and recommendations are approved by Directors Bartel and Bonneville. Mr. Eastman said to the committees that

"The recommendations made in the original memorandum were prepared by three directors of important bureaus of the commission and were based, not on theory, but on actual experience with and ample opportunity to observe the neglect by the carriers of adequate enforcement of the demurrage and storage rules, and the losses in net revenue which result from such neglect. They are in no doubt whatsoever in regard to the extent of this neglect and its importance from a net revenue standpoint.

"These conclusions have now been reviewed by a man on my staff who has had large practical experience on the railroad side with this matter, and he not only accepts the conclusions but makes recommendations which go considerably beyond those originally made. He, also, is in no doubt whatsoever in regard to the importance of the subject from a net revenue standpoint.

"The matter is one which merits, in my judgment, more thorough consideration than it has yet received at the hands of the co-ordinating committees, for it presents opportunities for *substantial net savings to the carriers*. I bespeak your careful consideration of Mr. Bell's memorandum. He will be glad to meet with you at your convenience, together with Directors Bartel and Bonneville, answer any questions which you may wish to ask, and discuss the matter at length."

Mr. Bell in his memorandum called attention to the fact that the report of the general committee was made to the board of directors of the A. R. A. in June but not received by Mr. Eastman for nearly six months after his letter of April 5.

"Summarized," he said, "it may fairly be said that certain of the recommendations, if made effective, would substantially improve the present situation but, taken as a whole, they fall far short of what is requisite for adequate country-wide supervision of demurrage and storage, especially in New England, trunk line, and C.F.A. territories, and in the great expanse of territory now under the jurisdiction of the Western Weighing and Inspection Bureau, to which would be added the state of Texas and a part of the territory now under the jurisdiction of the Intermountain Demurrage Bureau.

"Moreover, there is no assurance that the recommendations of the general committee will be made effective because: (1) The general committee could only recommend; (2) instead of making definite recommendations that certain things be done the committee contented itself with recommending that the attention of the railroad presidents be directed to some of them, and that the executive committees be requested to review or give consideration to others, and, therefore; (3) the approval by the co-ordinating committees of the recommendation of the general committee carries with it no requirement that the things the general committee believes should be done shall be put into effect.

"Mr. Bartel's recommendations, which contemplate a really efficient plan of demurrage and storage supervision, appear to have received scant consideration and one of his major recommendations has apparently been ignored,

viz, the establishment of one additional inspection bureau of the inspection and adjustment type and a redistribution of the western territory.

"The need for a radical change in the demurrage and storage setup in New England, trunk line and C.F.A. territories and in the territory under the jurisdiction of the Western Weighing and Inspection Bureau is manifest from the reports made to the general committee by the various bureaus in those territories. That additional supervision is needed in the Pacific Car Demurrage Bureau and the Intermountain Bureau is also disclosed. It is also evident that a larger force is needed in the territory under the jurisdiction of the Southern Demurrage and Storage Bureau. Yet there is no assurance in the report of the general committee, even if approved by the co-ordinating committees, that existing evils will be cured and sufficient remedy applied.

"The conclusions and recommendations of the general committee, if carried out, would simply be a partial remedy and would not cure the conditions now existing and, therefore, would not accomplish the objective you have in mind, viz, thorough and efficient nation-wide supervision of demurrage and storage." He said he was convinced that such supervision can only be accomplished by a sufficient number of demurrage and storage bureaus operating under the "Detail Plan," charged with the responsibility of properly supervising *all demurrage and storage,* without exception, (including demurrage and storage on coal at all ports, including lake ports). "Such bureaus would be vested with all the authority requisite for their most efficient operation, including the authority to require that adequate and accurate demurrage and storage records be kept at all stations. Obviously, it would be necessary to place under their jurisdiction all matters of refunds and cancellations of demurrage and storage charges. Manifestly, also, it would be necessary that all railroads subject to the interstate commerce act place under the jurisdiction of such bureaus the entire supervision of demurrage and storage at all points on their respective lines.

"This conclusion goes far beyond the recommendations contained in the above mentioned memorandum of Director Bartel. He agrees with me that if the proposed set-up can be had, it will constitute the best supervision possible. He feels, however, that if the whole loaf is not obtainable, what he originally recommended will go a long way toward curing the trouble."

In the original memorandum Mr. Bartel had said:

"Failure uniformly to apply the rules of the tariff, both as to demurrage and as to storage, may not only be in violation of section 6, but also of section 2 and/or section 3 of the interstate commerce act—and in some easily conceivable circumstances, of the Elkins act, also. The situation is serious and the need for correction is great."

Expressing the opinion that increased demurrage collections would probably meet the increased cost, he stated, that even as a result of the necessarily limited character of the checking done by the service agents of the commission, literally many thousands of dollars in demurrage charges have been collected by carriers that but for such checking would never have been assessed, saying also:

"That there are large incidental savings to be effected by the proper enforcement of the provisions of the demurrage tariffs is also true. Country-wide efficiency in this respect would save the carriers much money through a material contribution to car supply; through increased opportunity for the orderly use of terminal facilities; and by the attendant opportunity for minimizing switching and related expenses."

Develops New Process for Producing Zinc-Coated Wire

A NEW type of zinc-coated wire, known as Bethanized wire, on which the coating is said to be so ductile and tightly adherent to the steel base that it will not crack, flake or chip off under the most severe distortion, has been developed by the Bethlehem Steel Company at its plant at Sparrows Point, Md. The process for coating this wire is electrolytic, the metal

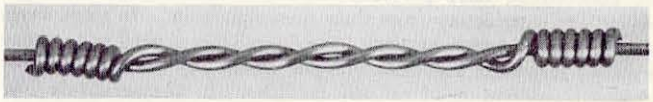


Photo by courtesy of Bethlehem Steel Co.
A Splice in Bethanized Telephone Wire

being deposited on the wire from a liquid solution. Wire coated with zinc in this manner is applicable for use in railroad service in right-of-way fence, telephone and telegraph lines, signal bonds, etc.

The zinc coating is applied in electrolytic cells 55 ft. in length, lined with lead and provided with anodes in the form of strips which extend the full length of the cell and divide it into compartments, through each of which a single wire is drawn. Current flows through the plating solution to the wires and is taken off the wires by means of contacts spaced at regular intervals. The cells now in operation are supplied with direct current from a 250 kw. motor generator set at 20 volts. The current density ranges from 700 to 1,400 amp. per

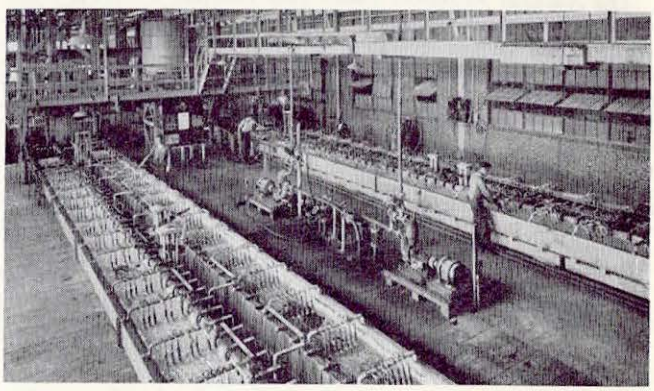


Photo by courtesy of Bethlehem Steel Co.
The Electrolytic Cells in Which Wire is Coated With Zinc in the Bethanizing Process

square foot. While there is said to be no limit to the thickness of zinc that can be applied to wire by this process, three grades have been set as standard for the present, the minimum thicknesses being such as to require 0.8, 1.6 and 2.4 oz. of zinc, respectively, per square foot. Bethanized wire ranging from 6 to 16 gage is now being manufactured regularly.

In preparing the zinc for the Bethanizing process, the roasted ore, containing about 65 per cent zinc, is weighed and placed in leaching tanks containing a specified concentration of sulphuric acid. This mixture is then filtered to remove impurities, after which the liquid is pumped into a storage reservoir from which it feeds into the electrolytic cells.

Wire is prepared for the process by passing it through a lead annealing bath, after which it is cleaned by a double electrolytic cleaning process to remove all oxide and other impurities.

Communications and Books . . .

Terminal Planning
A Worthy Relief Project

NEW YORK

TO THE EDITOR:

There has been little comprehensive planning of transportation facilities in our large urban centers. Many railroads, individually or collectively, have provided capacious and efficient terminals which are satisfactory from their own standpoint. In some cases urban transportation systems have been co-ordinated with these railroad terminals and, also in some cases, city planning has included consideration of railway facilities. In comparatively few instances, however, has any effort been made to study the transportation requirements of a city as a whole, relating railway facilities properly with regard to business and residential areas and correlating them with terminals of other transportation agencies—urban and long distance.

The Federal Co-ordinator of Transportation has been making some studies of railroad terminal unification, but these studies do not in general include provision for other forms of transportation. Moreover, the expense is being met entirely by an assessment on the railroads. The problem is one of such social importance that it is entirely fair for the community and the government, rather than the railroads alone, to assume the expense of such studies.

With the obvious social need for such comprehensive terminal planning studies, and with the government earnestly soliciting the submission of research projects of a worthy nature in order to provide relief employment, should not the railroads, the municipalities and other transportation agencies join in proposing these studies to the federal government as relief projects?

The National Resources Board (the National Planning Board prior to June 30, 1934) contemplates state and co-ordinated regional planning in several fields. Among these is transportation. The scope of this transportation planning was set forth by the National Planning Board in its Fifth Circular Letter of December 11, 1932, as follows:

Transportation. Of vital importance to the social and economic life of the State is the efficiency with which people and goods are transported by rail, highway, water and air. A re-examination should be made of the adequacy of present facilities, their interdependence, location and arrangement and the conflicts between different methods of transport such as a grade crossings, drawbridges and tunnels. We need to re-study our transportation system in relation to rural and urban development; power supply and transmission; probable distribution, growth and size of industrial areas; present and potential agricultural production; and to ports, terminals and markets for distribution of goods. All methods of transport should be regarded as part of a single system. To that end we must work out a practical method of integrating the different units so as to use each method in its most efficient and economic form.

Much preliminary and publicity organizaion for the purposes of the National Resources Board has been accomplished in the establishment of State Planning Boards for many of which the federal authorities have provided paid expert planning assistance. The general attitude of the National Resources Board as to technical direction of planning and the co-operation of the Federal Relief Administration in the planning and research projects, as expressed in a letter to the writer dated September 27, 1934, is as follows:

We have been convinced that one of the most serious handicaps faced by cities and counties in organizing and conducting profitable surveys and studies, is the lack of competent trained technical direction, and without this there is a limit to the extent to which stimulation can be given to a movement such as you suggest. Of course, the Federal Relief Administration has given its approval to research, surveys and planning projects as preferred types of work for the employment of professional and non-manual workers, so that the way is open for utilization of such assistance, if only competent administrative direction is available.

The work relief funds of municipalities, the states and the federal government, are now administered locally, and the organization of approved work relief research projects for the "integration of transportation" therefore comes under the jurisdiction of the local relief authorities. In order to take advantage of these opportunities to make studies and prepare tentative, if not final, comprehensive plans that will give some concrete idea of the scope and cost of such programs and possibly lay the foundation for official and legal comprehensive plans for the future, it is urgently necessary that definite research work projects be initiated by the railroads and the various municipalities and, after approval by the local, state and federal authorities, that they be organized at once for the winter's work.

In this connection, it is again desirable to emphasize the necessity in every such project for trained technical direction, as so forcefully stated by the National Resources Board in the quotation above. To obtain such competent trained technical direction, it will be necessary in the case of most municipalities to provide additional funds, perhaps outside of the funds specifically available for relief work projects, so that reasonably adequate professional compensation can be paid, without scandal, to properly experienced and qualified directors and administrators for the organization and technical direction of work of this character.

It must also be borne in mind, that if, in any particular case, the survey and planning involves the consideration of the territory of more than one municipality and state, separate projects must be initiated in each relief administration district involved. The several local projects when approved can then be co-ordinated as a comprehensive project by the technical directors and administrators.

In connection with any given city or region (population and traffic center) official provision should be made for the appointment of the following:

(1) An *advisory board* consisting of competent and representative members of each of the major interests involved in or affected by the planning, but without compensation.

(2) A *board of technical direction* consisting of three or five professional engineering members, on an acceptable fee (or salary) basis, to study and determine the scope and character of the surveys, studies, plans and reports to be made in connection with the project.

(3) An *executive director and administrator* on an adequate salary basis, to have sole charge of the organization and administration of the work to be done under the project as determined by the board of technical direction. The executive director and administrator to be one of the members of the board of technical direction.

If responsible railroad officers in each community of any size will secure the co-operation of city officials and representatives of other forms of transportation, there would seem to be no reason why comprehensive planning could not be undertaken on a large scale, thereby providing unemployment relief of a distinctly constructive character which will tend to benefit all the interests involved, including those of the public.

STACY W. KAPP
Engineer.

New Book

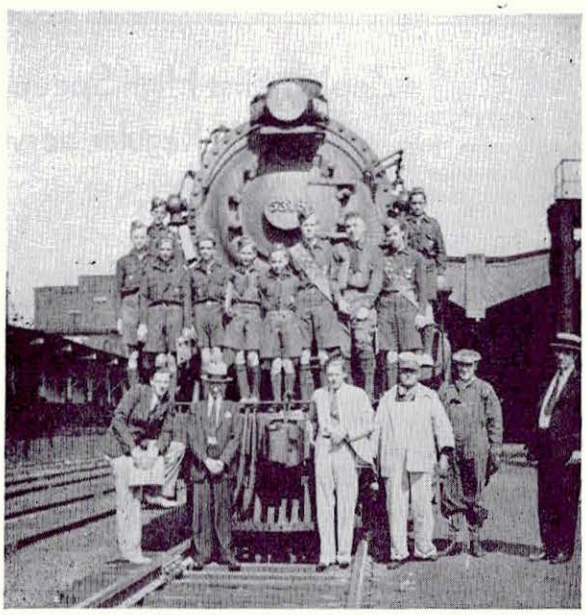
Proceedings American Wood-Preservers' Association for 1934, 523 pages, 6 in. by 9 in. Illustrated. Bound in cloth. Published by the Association, Washington, D. C. Price $6.

This, the thirtieth annual Proceedings of the association, contains 30 papers and committee reports, in addition to the usual record of routine business. While some of the papers are of more particular interest to those who are engaged in the wood preserving industry, six are of equal interest to consumers of treated wood. These are Creosote Permanence—Toxicity Relationships; Production of Non-Bleeding Creosoted Poles; Composite Timber-Concrete Construction for Buildings and Other Structures; Termites and Methods for Combating Them; Creosote Treatment of Green Beech, Birch and Maple Ties; and Durability of Paint on Wood Treated with Zinc Chloride. Several committees are collecting service records of treated timber, including ties, poles, structural timbers and marine piling, and extensive reports were presented on these subjects. The statistical section contains the twenty-fifth annual report on the quantities of wood treated and preservatives used in the United States, which, during this entire period, have been compiled by R. K. Helphenstine, Jr., of the Forest Service of the Department of Agriculture.

Odds and Ends . . .

Railroad Fascinates Scouts

The Baltimore & Ohio entertained a group of Boy Scouts from Paterson, N. J., recently, many of whom had never been on a train before. That boys are still boys was indicated by the tremendous interest and enthusiasm displayed by the youngsters. The accompanying illustration shows a happy swarm of them on the pilot of a B. & O. locomotive.



Boy Scout Troop of Paterson, N. J., Visits B. & O. Terminals in Jersey City

Long Waybills

SAVANNAH, GA.

TO THE EDITOR:

In the *Railway Age* for August 18, 1934, mention was made of a record made in the handling and movement in one day of a mammoth assortment of dry goods, covered by a large number of separate waybills. On August 22, 1934, Paul Gay, our agent at Trion, Ga., issued 291 separate bills of lading and waybills, covering 648,245 articles of dry goods, which were loaded in 10 cars. Of the 291 separate shipments, 226 were consigned to one firm at destinations throughout the United States. All of the shipments were loaded in the morning, were waybilled and were enroute by 7 p. m.

C. D. CHANCELLOR,
General Freight Agent, Central of Georgia

Railroad Nicknames

The number of railroad nicknames seems endless, and, judging from the flood of correspondence received in this regard, it is an extremely popular subject.

In this connection, E. E. Parker of Akron, Ohio, wonders why the S. A. L. escaped the nickname of the "Sally" when the M-K-T is so universally known as the "Katy".

R. H. Colombe of Chicago points out a clever use of railway initials on the part of the L. & N. E. in advertising the Flying Scotsman, as follows:

London & North Eastern Railway
London Nonstop Edinburg Route

Among the list of other nicknames sent in are the following:

Elizabethtown, Lexington & Big Sandy—Eat Little & Be Satisfied

Bellaire, Zanesville & Cincinnati—Bent, Zigzag & Crooked

Terre Haute & Peoria—Take Hold & Push

Cincinnati, New Orleans & Texas Pacific—Connections No Object, Tickets Please

Georgia, Florida & Alabama—Gophers, Frogs & Alligators

Mississippi River & Bonne Terre—Miserable Road & Bad Track

International Great Northern—Irishman Going North

Lake Shore & Michigan Southern—Large Stations & Miserable Salaries

Chicago Great Western—Corn Growers' Weekly

Minneapolis & St. Louis—Missing & Still Lost

Morris & Essex—Methodist & Episcopal

The latter road acquired its nickname from the fact that no trains were operated over it on Sunday.

A Durable Tie

VICKSBURG, MISS.

TO THE EDITOR:

We can go one better than the cedar tie report in the *Railway Age* for September 24 as in the track 46 years and still going. We have a "fat" pine tie, 10 in. by 12 in. by 10 ft. that was laid in the Alabama & Vicksburg track near Newton, Miss., in 1875, and has been in continuous service since. It remained in dirt ballast until 1908, when slag ballast was substituted. It has borne five different weights of rail: Chair rail, 53 lb.; 60 lb.; 75 lb. and 90 lb., and is still good for an estimated life of 50 years. The age and service of the tie is verified by J. A. Spears, pensioner, who worked on the section at the time the tie was cut from the woods nearby with a chopping ax and laid in the track.

J. T. STANFORD,
Superintendent, Yazoo & Mississippi Valley.

Railway Lawyers

The law department of the Illinois Central claimed some sort of record recently when Anne G. Carter of that department passed her bar examinations. She is the fifth employee of the Chicago office to become a member of the bar by studying at night.

Largest Passenger?

Argentina claims the world's fattest man and largest railway passenger. He is Pedro Cardozo, a butcher, weighing 638 lb. He arrived in Buenos Aires recently from Rosario after traveling in a baggage car because he could not enter the coaches. He is 30 years old, 5 feet 6 inches tall, with a waist line of 7 feet 10 inches, a forearm of 1 foot 10 inches and a thigh of 3 feet 9 inches.

* * *

Southern Pacific Legion Post 412, the only railroad post in California, was recently presented with a set of national and post colors by the Southern Pacific Company. Frank L. Burckhalter, vice-president of the company, shown standing in the center foreground, made the presentation during a ceremony held in the courtyard of the railroad's general office at San Francisco, in which members of the post and the Southern Pacific band participated

NEWS

Gross and Net Earnings Were Down in September

1.34 per cent return compares with 1.97 for September, 1933—Nine months return 1.8 per cent

Class I railroads for the first nine months of 1934 had a net railway operating income of $342,609,842, which was at the annual rate of return of 1.80 per cent on their property investment, according to reports filed with the Bureau of Railway Economics of the Association of American Railroads. In the first nine months of 1933, their net railway operating income was $341,457,795 or 1.78 per cent on their property investment. Operating revenues for the first nine months totaled $2,464,070,761, compared with $2,298,236,307 for the same period in 1933, an increase of 7.2 per cent. Operating expenses for nine months amounted to $1,836,277,444, compared with $1,665,882,164 for the same period in 1933, an increase of 10.2 per cent.

CLASS I RAILROADS—UNITED STATES

	1934	1933	Per cent of Increase or Decrease
	Month of September		
Total operating revenues	$275,510,715	$292,158,838	5.7 Dec.
Total operating expenses	203,800,353	199,434,706	2.2
Taxes	19,939,482	22,066,461	9.6 Dec.
Net railway operating income	41,020,484	60,608,883	32.3 Dec.
Operating ratio—per cent	73.97	68.26	
Rate of return on property investment	1.34%	1.97%	
	Nine Months Ended September 30		
Total operating revenues	$2,464,070,761	$2,298,236,307	7.2
Total operating expenses	1,836,277,444	1,665,882,164	10.2
Taxes	188,743,346	199,633,603	5.5 Dec.
Net railway operating income	342,609,842	341,457,795	0.3
Operating ratio—per cent	74.52	72.49	
Rate of return on property investment	1.80%	1.78%	

Class I railroads in the first nine months of 1934 paid $188,743,346 in taxes compared with $199,633,603 for the same period in 1933, a decrease of 5.5 per cent. For the month of September alone, the tax bill amounted to $19,939,482, a decrease of $2,126,979 or 9.6 per cent under September, 1933.

Thirty-two Class I railroads failed to earn expenses and taxes in the first nine months of 1934, of which 8 were in the Eastern district, 7 in the Southern, and 17 in the Western district.

Class I railroads for September had a net of $41,020,484, which was at the rate of 1.34 per cent. In September, 1933, their net was $60,608,883, or 1.97 per cent. Operating revenues for September amounted to $275,510,715 compared with $292,158,838 in September, 1933, a decrease of 5.7 per cent. Operating expenses in September, totaled $203,800,353, compared with $199,434,706 in the same month in 1933, an increase of 2.2 per cent.

Class I railroads in the Eastern district for nine months had a net of $204,365,803, at the rate of 2.24 per cent. For the same period in 1933, their net was $212,743,974 or 2.32 per cent. Operating revenues in the Eastern district for nine months totaled $1,258,955,341, an increase of 6.5 per cent above the corresponding period in 1933, while operating expenses totaled $911,498,740, an increase of 10.6 per cent. Class I railroads in the Eastern district for September had a net of $19,907,638, compared with $33,500,376 in September, 1933.

Class I railroads in the Southern district for nine months had a net of $39,548,079, at the rate of 1.67 per cent. For the same period in 1933, their net amounted to $43,595,061, at the rate of 1.81 per cent. Operating revenues in the Southern district for nine months amounted to $306,363,424, an increase of 5.3 per cent, while operating expenses totaled $236,128,622, an increase of 8.8 per cent. Class I railroads in the Southern district for September had a net of $3,025,762, compared with $4,909,741 in September, 1933.

Class I railroads in the Southern district for nine months had a net of $98,695,960, at the rate of 1.31 per cent. For the same nine months in 1933, they had a net of $85,118,760, at the rate of 1.12 per cent. Operating revenues in the Western district for nine months amounted to $898,751,996, an increase of 8.9 per cent, while operating expenses totaled $688,650,082 an increase of 10.3 per cent. For September, the railroads in the Western district reported a net of $18,087,084. The same roads in September, 1933, had a net of $22,198,766.

Russian Train Dispatcher Sentenced to Death

An Associated Press dispatch of November 5 reports the result of the investigation of a collision in Russia as the sentencing to death of Vasily Lennik, train dispatcher at Osnova, for his responsibility for the collision which involved one fatality; and long prison sentences were imposed on two other employees.

Zephyr First High Speed Train in Regular Service

Will start scheduled runs between Lincoln, Neb., and Kansas City, Mo., on November 11

The Zephyr of the Chicago, Burlington & Quincy will be placed in regular service between Lincoln, Neb., and Kansas City, Mo., on a schedule of 5 hr. 30 min. southbound and 5 hr. 25 min. northbound, on November 11, thereby becoming the first high speed train to be assigned a fixed daily schedule. The train will leave Lincoln at 7:30 a.m., will arrive at Omaha at 8:25 a.m., will leave Omaha at 9 a.m. and will arrive in Kansas City at 1 p.m. Returning, it will leave Kansas City at 2:30 p.m., will arrive at Omaha at 6:30 p.m., will leave Omaha at 7 p.m. and will arrive at Lincoln at 7:55 p.m. The standard coach fare will be charged on this train and in addition 12 seats in the solarium-lounge car will be classified as parlor car seats and can be reserved for $1 each.

The initial run will be accompanied by ceremonies. A covered wagon, drawn by oxen, and two stage coaches will be contrasted with the Zephyr at Lincoln, while Indians in full regalia will greet the train at Omaha at 8:25 a.m. When the train reaches St. Joseph, Mo., at 11:30 a.m., Fred Carlow, a grandson of Buffalo Bill, will re-enact the Pony Express by galloping away with mail brought by the train and addressed to local notables. At Kansas City at 1 p.m., a pioneer locomotive and mail coach will be on exhibit alongside the Zephyr.

From November 3 to November 10, the Burlington operated a number of excursions on the train to satisfy the curiosity of people along the line and thus reduce the number of persons who will try to ride the train on November 11. These roundtrip excursions were operated out of Lincoln, Omaha, Council Bluffs, St. Joseph, Weston, Atchison, Leavenworth and Kansas City. At Lincoln on November 3, a rainy day, 217 persons at $1 each were carried on 7 trips of one hour each. At Omaha on November 4, 434 persons at $1.25 each were carried on 7 trips of 90 min. each. At Council Bluffs on November 5, 342 persons at 75 cents each were carried on 5 trips of about one hour each. The remaining points were as follows: At St. Joseph on November 7, seven trips 90 min. each, charge $1.25; at Weston, Mo., on November 8 one special trip; at Atchison, Kan., on November 8, four trips, one hour each, charge $1; at Leavenworth, Kan., on November 9, five trips, one hour each, charge $1; and at Kansas City, Mo., 7 trips, one hour each, charge $1.

Secretary Roper Appoints New Transport Assistant

Has found need in department for one familiar with problems of all classes of carriers

Secretary of Commerce Roper has announced the appointment of Labert St. Clair, of New York City, as his transportation assistant. Mr. St. Clair has been connected with an advertising agency in New York and has had a prominent part in government publicity campaigns. In announcing the appointment, Secretary Roper said:

"The appointment of Mr. St. Clair is being made to meet an imperative need in the department for a man familiar with land, air and water transportation problems. They arise daily in the department, for commerce and transportation go hand in hand. We cannot possibly have a return to permanent prosperity in the United States until the efforts of transit and other business groups are properly co-ordinated. It is the desire of the Department to aid in accomplishing this result and to that end I am seeking to strengthen its personnel.

"Mr. St. Clair has been chosen first, because of his familiarity with all forms of transportation, and secondly, because he is able to approach and interpret transit problems from the standpoint of the patron and business man.

"The familiarity of Mr. St. Clair with the many broad phases of transportation is indicated by his recently published book, 'Transportation Since Time Began.' This work, the result of three years intensive research, interviewing of prominent transportation authorities and writing, was the first attempt of any author to tell the entire story of world land, air and water transportation. It strongly urges the need for transit co-ordination along local and national lines, the elimination of obsolete and duplicating services and radical changes feature of Department work with which in personnel and sales methods. Another Mr. St. Clair is familiar is that of street and highway safety. As assistant to Barron Collier, former safety commissioner of New York, he was active in accident prevention, and his experience in this work is expected to prove helpful in the Department's effort to make travel safer on both land and sea and in the air."

Complaints Against Domestic Freight Forwarding Rates Dismissed

The National Industrial Recovery Board has held that "the record does not warrant suspension or cancellation of rates, tariffs, charges and terminal rules and regulations" of the domestic freight forwarding industry, and has dismissed complaints against the rate structure. The rates were approved and established by the code authority under the industry's code. Subsequently, complaints were filed with the administration, and an opportunity was given at a public hearing and later conferences to submit data on the rate structure. The industry maintains a large rate schedule to cover its service in assembling, consolidating and forwarding domestic freight in less-than-carload and carload lots.

In recommending approval of the code on December 6, 1933, the National Recovery Administration reported that "this industry represents an exception in the present depression in that it has added to its personnel and expanded steadily from year to year. Its personnel increased about 55 per cent from 1929 to July, 1933. There was a further increase in personnel of 18.4 per cent and an increase in pay roll of about 14.7 per cent following compliance with the President's Reemployment Agreement. As a result of this code, these gains will be consolidated and further improved."

Mediation Board Certifies Employee Representation

The National Mediation Board has certified, as the result of an election, that the Brotherhood of Railroad Signalmen has been authorized to represent the employees in the signal department of the Great Northern.

After an election of employees of the Atlantic, Birmingham & Coast mechanical department the board has certified that the Metal Trades Crafts Association, Atlanta, Birmingham & Coast Railroad, has been authorized to represent the machinists, boilermakers, blacksmiths, sheet metal workers, and electrical workers and their helpers and apprentices, and that the Association of Car Employees of the Atlanta, Birmingham & Coast Railroad has been authorized to represent the carmen, and their helpers and apprentices.

Minimum Rentals Proposed in Tank Car Service Industry

The code authority for the tank car service industry on November 5 presented at a public hearing conducted by Deputy Administrator C. P. Clark a series of resolutions, agreed to by the tank car trade association, seeking the approval of minimum rentals for tank cars by the National Industrial Recovery Board. The code authority has determined that an emergency exists in the industry caused by destructive price cutting to such extent as to render ineffective or seriously endanger the maintenance of the provisions of its code.

John E. MacLeish, of Chicago, presented the resolutions on behalf of the code authority. He stated that there were 90,000 cars operated by the industry of which 87,023 were operated by members of the trade association.

Witnesses stressed the need for monthly rental leases for tank cars. This was an early practice in the industry, but had lately been abandoned. As conditions are now, Lester N. Selig, Chicago, president of the American Tank Car Service Company, one of the larger units, said, "we are actually paying the railroads to use our cars." By this he meant, he said, that the "trip" method of rental, now prevailing, resulted in an excess of empty over loaded mileage, thus forcing tank car owners to pay the railroads for hauling empty cars over mileage which netted them (the tank car owners) little or no revenue.

I. C. C. Examiners Disagree in Report on Cotton Rates

Rice differs with Mattingly, whose views are represented in the document

Examiners G. H. Mattingly and C. A. Rice of the Interstate Commerce Commission have failed to agree in a proposed report to the commission on a comprehensive investigation instituted by the commission on October 27, 1933, into the lawfulness of the rates, rules, regulations, and practices applicable to the transportation of cotton between points in the Southwest and Memphis, Tenn., gulf ports, and points in trunk line, New England, and southern territories. It is no new thing for commissioners to disagree and file dissenting opinions but separate reports of examiners assigned to a case are unusual.

The report points out that the cotton rate structure has been in an extreme state of flux and turmoil during the past several years, due primarily to intense competition between the rail carriers and unregulated trucks, barges, and coastwise vessels, and Examiner Mattingly, whose views are represented in the report, after a review of the recent rate changes says that "the railroad managements in attempting to meet the competition of competing agencies are afloat upon a sea of uncertainty without a reliable chart or compass." He believes that their actions must be based upon their best judgment and that "the commission, which has frequently observed that it is not the manager of the railroads, should not interfere except upon clear and convincing evidence of some violation of the law which it administers." There is attached to the report, however, a separate statement by Examiner Rice expressing differing views and recommending numerous changes in the present structure. Mr. Mattingly recommends that the commission make findings including the following:

That the application of carload rates to the transportation of cotton is not shown to be unlawful, and that none of the carload rates here considered within and from the Southwest are shown to be unreasonably high, nor lower than necessary to meet competition nor so low as not to be reasonably compensatory.

That the various carload minima are not shown to be unlawful.

That the propriety of the difference or spread between carload rates in connection with various minima cannot be determined upon this record, and that the proceeding should be reopened with respect to this subject.

That rules governing the assembling of less-than-carload shipments into carloads, as a whole, are not shown to be unlawful, but that the requirement by certain carriers, under the so-called deferred shipment rule, that a charge of 3 cents shall be made for stopping a shipment in transit and that a minimum of 15 bales shall be covered by one bill of lading, while no similar charge or limitation is made in connection with the so-called pool car rule, is unduly prejudicial to traffic and the shippers thereof under the former rule, and unduly preferential of traf-

fic and the shippers thereof under the latter rule.

That the maintenance of rates from any point in the Southwest to Lake Charles or any of the Texas ports upon a level higher than the carload basis which applies from any southwestern point of origin to any Texas port for substantially the same distance results in undue prejudice to the cotton traffic to the port to which such higher level of rates is maintained and to the shippers thereof, and in undue preference of the traffic to the port or ports to which the lower level is maintained and of the shippers thereof; provided, however, that points of origin may be grouped, and provided further, that Houston, Galveston and Texas City shall be considered as one port and the rates thereto equalized as at present.

That the relation of rates from Texas and from other southwestern states to southern mill points is unduly prejudicial to Texas points and shippers of cotton therefrom and unduly preferential of points in other southwestern states and of shippers of cotton therefrom, and that this undue prejudice and preference should be removed by establishing carload rates from Texas to southern mill points not in excess, distance considered, of the carload rates contemporaneously maintained from points in Oklahoma to the same destinations, and subject to substantially the same transit rules and regulations, due consideration being had for differences in the character of the rate adjustments and transit arrangements in the two states.

That rules which permit one shipper to obtain a rate advantage over another by substitution of freight bills in connection with transit are in violation of sections 3 and 6 of the act but that determination of the method by which this situation should be corrected should be deferred for further consideration.

"The competition with which the rail carriers have been confronted, while very intense, is of a character which is extremely difficult of appraisal." Mr. Mattingly says, "because even at the time when the transportation of cotton by unregulated agencies was at its height there was no authentic source of information available to the rail carriers as to the charges which were being made by such agencies. At the present time it is still more difficult because from a large portion of the territory considered the carload rate adjustment has had the effect, to a considerable extent, of eliminating the unregulated agencies from the transportation picture, with the result that the competition is quite largely potential only. It follows that an attempt to determine whether the competitive rail rates are lower than necessary to meet the competition, or whether the relation between such competitive rates is different from that which is warranted by the respective influences affecting individual rates, would involve a determination of the degree of potentiality of competition much of which at the moment is quiescent but which is by no means dead."

Wages to Rise 5 Per Cent in Canada

Agreement has been reached between the managements of the Canadian Pacific and Canadian National and the representatives of the 16 railway labor organizations respecting wage rates for the coming year. The employees are at present working under a 15 per cent deduction from basic rates. On January 1, 1935, the general scale of compensation will be revised so that the deductions will be 12 per cent instead of 15, and on May 1 a further revision will be made to 10 per cent.

The agreement covers enginemen, firemen, conductors, trainmen and yardmen, railway and commercial telegraphers, maintenance of way employees, the federated shop employees and signal maintainers on both roads, and clerks, freight handlers and station employees of the Canadian Pacific.

Yellowstone Park Visitors Exceed 1929 Peak

Figures compiled by the passenger department of the Northern Pacific show that the peak year of 1929, when 260,697 persons entered Yellowstone National Park, was exceeded this year by 78 persons. The increase in attendance in 1934 over 1933 was 61 per cent. A feature of the record attendance was the increase in rail travel, which was 107.5 per cent, as compared with last year. Rail visitors from the four leading states were New York, 2,104; Illinois, 1,569; Pennsylvania, 1,042; and Ohio, 973. Rail visitors came from every state in the Union and from 28 foreign countries. Canada, England and Germany were the three leading foreign countries.

V. R. Hawthorne to Address Western Railway Club

The Western Railway Club will devote its next regular monthly meeting to a discussion of problems relating to railway freight equipment. The meeting will be held Monday evening, November 19, at the Hotel Sherman, Chicago, the principal address on "The Freight Car" being presented by V. R. Hawthorne, secretary, Association of American Railways, Mechanical division.

Net Deficit For Eight Months $35,546,017

Class I railroads in the first eight months of this year had a net deficit after fixed charges of $35,546,017, as compared with a deficit of $54,013,000 in the corresponding period of last year, according to the Interstate Commerce Commission's monthly compilation of selected income and balance-sheet items. For the month of August there was a net deficit of $3,794,951, as compared with a net income of $17,378,968 in August, 1933. The summary follows:

SELECTED INCOME AND BALANCE-SHEET ITEMS OF CLASS I STEAM RAILWAYS

Compiled from 143 reports (Form IBS) representing 149 steam railways

TOTALS FOR THE UNITED STATES (ALL REGIONS)

For the month of August 1934	For the month of August 1933	*Income Items*	For the eight months of 1934	For the eight months of 1933
$39,677,253	$61,401,989	1. Net railway operating income	$300,702,051	$280,848,912
12,634,333	13,056,218	2. Other income	114,538,262	115,968,223
52,311,586	74,458,207	3. Total income	415,240,313	396,817,135
11,175,668	11,511,378	4. Rent for leased roads	89,020,719	88,529,776
43,447,425	44,011,951	5. Interest deductions	347,482,994	354,028,817
1,483,444	1,555,910	6. Other deductions	14,282,617	8,270,542
56,106,537	57,079,239	7. Total deductions	450,786,330	450,829,135
d 3,794,951	17,378,968	8. Net income	*d 35,546,017*	*d 54,012,000*
		9. Dividend declarations (from income and surplus):		
11,614,050	12,260,623	9-01. On common stock	56,604,921	44,777,243
3,756,765	2,925,331	9-02. On preferred stock	12,663,350	10,189,146

BALANCE-SHEET ITEMS

Selected Asset Items	Balance at end of August 1934	Balance at end of August 1933
10. Investments in stocks, bonds, etc., other than those of affiliated companies (Total, Account 707)	$757,517,081	$749,054,570
11. Cash	$300,867,499	$306,447,660
12. Demand loans and deposits	40,202,700	42,118,579
13. Time drafts and deposits	43,531,757	52,084,544
14. Special deposits	47,828,549	28,148,982
15. Loans and bills receivable	6,605,924	10,602,947
16. Traffic and car-service balances receivable	49,545,965	50,464,648
17. Net balance receivable from agents and conductors	42,813,886	44,439,423
18. Miscellaneous accounts receivable	146,796,943	133,464,420
19. Materials and supplies	310,332,740	292,893,760
20. Interest and dividends receivable	43,113,039	41,987,624
21. Rents receivable	3,390,236	2,528,499
22. Other current assets	4,080,437	4,299,950
23. Total current assets (items 11 to 22)	$1,039,109,675	$1,009,481,036
Selected Liability Items		
24. Funded debt maturing within 6 months*	$77,303,958	$106,018,459
25. Loans and bills payable†	$296,816,458	$338,097,620
26. Traffic and car-service balances payable	65,833,954	70,628,571
27. Audited accounts and wages payable	208,233,108	193,877,212
28. Miscellaneous accounts payable	53,074,319	53,894,323
29. Interest matured unpaid	279,935,599	199,364,084
30. Dividends matured unpaid	9,491,844	4,775,919
31. Funded debt matured unpaid	273,661,098	98,310,692
32. Unmatured dividends declared	14,483,124	14,464,738
33. Unmatured interest accrued	111,020,011	113,714,171
34. Unmatured rents accrued	32,692,819	30,174,016
35. Other current liabilities	17,096,351	15,879,174
36. Total current liabilities (items 25 to 35)	$1,362,338,685	$1,133,180,520
37. Tax liability (Account 771):		
37-01. U. S. Government taxes	$35,167,377	$37,234,035
37-02. Other than U. S. Government taxes	159,011,116	176,099,575

* Includes payments which will become due on account of principal of long-term debt (other than that in Account 764, Funded debt matured unpaid) within 6 months after close of month of report.
† Includes obligations which mature less than 2 years after date of issue.
d Deficit.

Executive Committee of A.A.R. Establishes Offices in Washington

Members of the executive committee of the new Association of American Railroads have established offices in Washington at the headquarters of the association in the Transportation Building and will be regarded as in continuous session. On Wednesday the committee members, including President Pelley, who is ex officio chairman of the committee, and accompanied by R. V. Fletcher, vice-president and general counsel, conferred with Coordinator Eastman. A conference with President Roosevelt was also planned.

Chicago Car Men Plan Open-Discussion Night

The Car Foremen's Association of Chicago will introduce an innovation at its regular monthly meeting, Monday evening, November 12, at the LaSalle hotel, Chicago, by holding an "Open-Discussion Night." In addition to 10 selected questions relating to car-department matters which it is proposed to ask and answer in the course of the meeting, the members will be invited to submit questions from the floor bearing on all phases of their work except interchange rules, which will be considered at the January and February meetings.

R. C. C. Has Returned 25 Per Cent

Through liquidating distributions, the Railroad Credit Corporation has returned $18,419,797 or 25 per cent of the net emergency freight revenues collected by the participating carriers through March 31, 1933, according to a report as to its financial condition filed with the Interstate Commerce Commission. Of this amount, $8,034,733 was in cash and $10,385,064 in credits on obligations due the Corporation. The corporation has made eleven liquidating distributions, the last one having been made on October 31, in the amount of $723,781, or one per cent of the fund. Collections in October totaled $272,525, made up of $193,662 paid in reduction of loans, $78,860 in payment of interest, and $3 from miscellaneous sources.

Lackawanna Exhibits New Equipment

The Delaware, Lackawanna & Western is exhibiting at Hoboken, Binghamton, Buffalo, Elmira, Syracuse and other cities examples of its new steam locomotives and freight cars recently acquired under a P.W.A. loan.

The equipment purchased included 20 steam locomotives, designed by mechanical experts of the railroad and known as the Pocono type, 500 50-ton hopper cars, designed for coal and other bulk tonnage, and 986 wooden box cars converted to all-steel box cars at the Lackawanna's Keyser Valley Shops at Scranton.

The locomotives, which are of the 4-8-4 type, are being built by the American Locomotive Company at Schenectady, N. Y., and Dunkirk. The combined length of locomotive and tender is 99 ft. 8½ in., the height to top of stack being 15 ft. 4 in. The weight on drivers is 274,000 lb., while the total weight of locomotive and tender is 760,000 lb. Capable of exerting a tractive force of 72,000 lb., the locomotives have a capacity of 4,025 hp. The capacity of the tender is 28 tons of coal and 16,000 gallons of water.

The hopper cars are being built by the American Car & Foundry Company at Berwick, Pa., and by the Magor Car Corporation, Passaic, N. J.

The oil-electric locomotives are being built by the Ingersoll-Rand Corporation and by the Winton Engine Company.

P.R.R. 99 Per Cent on Time

The Pennsylvania makes public its record of passenger train movement for the nine months ending with September 30, showing that the 3,400 passenger trains operated daily on the company's lines made their schedules nearly 99 per cent perfect.

Refrigerator Car Tariffs Suspended

The Interstate Commerce Commission has suspended for seven months from November 1 tariff schedules filed by the railroads in purported compliance with the commission's views as expressed in its report of its private car investigation in which the carriers proposed to reserve to themselves the exclusive right to furnish refrigerator cars. The roads proposed to furnish such cars either of their own ownership or by arrangement with non-shipper or shipper-owned private car lines, paying mileage for the use of non-owned cars only to the owners and not to lessees of such cars. Many protests were received from shippers of dairy products and small packers, taking the position that the railroads were not complying with the views expressed by the commission.

A.S.M.E. Annual Meeting

The various divisions of the American Society of Mechanical Engineers will meet at the Engineering Societies building, New York, December 4-7. The Railroad Division will hold two sessions, at the first of which—at 9:30 a. m. Tuesday, December 4—two papers will be presented:

Tractive Effort of Steam Locomotives (Locomotive Ratios—II), by A. Lipetz, consulting engineer, American Locomotive Company.

Locomotive Tractive Effort in Relation to Speed and Steam Supply, by E. J. Young, research professor, Railway Mechanical Engineering, University of Illinois, and C. P. Pei, New York Air Brake Company.

At the second session, to be held at 2 p. m. on the same day, the following will be presented:

Draft-Gear Action in Long Trains, by O. R. Wikander, mechanical engineer, Ring Spring Department, Edgewater Steel Company.

Alloy Steel and Its Application to Car Equipment, by J. A. Rolston, manager, Railroad Research Bureau of the subsidiary manufacturing companies of the U. S. Steel Corporation, and A. F. Stuebing, railroad mechanical engineer, Commercial office, U. S. Steel Corporation.

Progress Report in Railroad Engineering.

The annual dinner of the Society will be held at the Hotel Astor at 6:30 p. m., Wednesday, December 5. A Calvin W. Rice lecture will be given at 4:30 p. m., on the same day and the Towne lecture will be given at 8:30 p. m. on Thursday, December 6.

Simultaneous with this meeting is the Eleventh National Exposition of Power and Mechanical Engineering at the Grand Central Palace, New York.

Construction

ALTON.—A contract for the construction of a steel coaling station with a 100-ton storage bin at Mexico, Mo., has been awarded to the Roberts & Schaefer Company, Chicago.

CHICAGO GREAT WESTERN.—A contract has been awarded to the Roberts & Schaefer Company, Chicago, for the installation of a modern cinder handling plant in the yard at Forty-sixth street, Chicago.

DELAWARE & HUDSON.—The New York Public Service Commission has approved as not excessive a low bid of $46,556 submitted by the Wilson & English Construction Company, New York, for the elimination of the Esperance station crossing of this road in Duanesburg, N. Y., and has directed the railroad to award the necessary contract and begin the work as soon as practicable. The operation of orders directing the elimination of the Beckers, Camerons and Bunkers crossings of this road near Central Bridge station in Esperance, has been suspended by the commission until July, 1936.

ERIE.—The New York Public Service Commission has denied a petition of this road to vacate and rescind the commission's order for the reconstruction of the highway bridge carrying Olean-Hinsdale state highway over the Erie tracks in Olean, N. Y. See *Railway Age*, September 15, 1934, page 329.

LEHIGH VALLEY.—Bids have been received for grade crossing elimination work at Central avenue, Picton, N. J., Union county, to cost about $110,000, also for similar work to be carried out at Park avenue, Oaktree, N. J., Middlesex county, to cost $100,000.

MAYO & COOK'S HAMMOCK.—Upon further consideration the Interstate Commerce Commission has authorized this company to construct a line extending from a connection with the Live Oak, Perry & Gulf at Mayo, Fla., to Cook's Hammock, 13 miles. The estimated cost of construction is $175,789.

MISSOURI PACIFIC.—A contract has been awarded to H. B. Deal & Company, Inc., St. Louis, Mo., for alterations to this company's freight house at the corner of Second and Biddle streets, St. Louis.

QUEBEC EXTENSION—The application of this company for a loan of $3,000,000 from the Reconstruction Finance Corporation for the purpose of completing the construction of a proposed new line from Washburn, Me., to LacFrontier at the International boundry line, 112 miles, and for the purchase of equipment has been approved by the Interstate Commerce Commission. The company was organized in 1924 and the following year was granted a certificate by the I. C. C. authorizing the construction. Richard H. Wheeler, 16 East Forty-first Street, New York, is president of the company.

Equipment and Supplies

PASSENGER CARS

THE DENVER & RIO GRANDE WESTERN is inquiring for from two to four dining cars.

Streamlined Train for Illinois Central

The Illinois Central has placed an order with the Pullman Car & Manufacturing Corporation for a five-car, streamlined, articulated, Diesel-electric, Cor-Ten steel passenger train for use between Chicago and St. Louis, Mo. The train, which will be built in the Pullman shops at Chicago and which will cost $400,000, will be delivered next spring. It has been designed especially for the Chicago-St. Louis service and will operate on a schedule of less than five hours, making a round trip daily. This train, which will weigh 250 tons loaded and which will have an overall length of 330 ft., will replace two six-car steam trains weighing 601 tons with locomotive and tender. It will be propelled by a Winton Engine Company 1,200-hp. Diesel-electric engine for which the electrical equipment will be furnished by the General Electric Company.

The five cars, all of which will be air-conditioned and which will have a seating capacity for 150 passengers, will include a motor car, a baggage, mail and express car, two chair cars and a lounge car. Cor-Ten steel, a product of the United States Steel Corporation, will be used in the framework, while aluminum will be used in the remainder of the body and for the interior finish.

One of the distinctive features of the train will be its provision for dining service. An electrically-equipped kitchen in the lounge car will supply meals to dining tables located in that car and to seats in the chair cars, each of which will have a collapsible table.

LOCOMOTIVES

Illinois Central Orders Locomotives to Cost $1,200,000

One of the largest orders ever placed for Diesel electric locomotives has been let by the Illinois Central, the amount involved being 11 locomotives and the cost $1,200,000. Of the 11 locomotives, 3 will be transfer locomotives and 8 will be switching locomotives. The Busch-Sulzer Brothers Diesel Engine Company, St. Louis, Mo., the Winton Engine Company, Cleveland, Ohio, and the Ingersoll-Rand Company, New York, will each construct one transfer locomotive while the American Locomotive Company will build the eight 600-h.p. switching locomotives. The transfer locomotive to be constructed by the Busch Company will have a 2,000-hp. unit, the largest single motor yet ordered for railway service, while the remaining two transfer locomotives will be equipped with 1,800-hp. units. The electrical equipment for the transfer locomotives will be furnished by the General Electric Company, while the electrical equipment for the switching locomotives will be furnished by the Westinghouse Electric & Manufacturing Company. The contracts for this equipment provide for deliveries to begin on March 1, 1935, with completion by mid-year.

This purchase represents one of the major steps in the progressive elimination of steam operation on the Chicago terminal of the Illinois Central in accordance with the so-called Lake Front ordinance of 1919. This ordinance, which is a three-party contract between the railroad, the city of Chicago and the South Park Commissioners, provides that the Illinois Central suburban service be electrified by February, 1927; that steam operation in freight service north of Roosevelt road except for the handling of manifest trains be eliminated by February, 1930; and that arrangements be made prior to February, 1935, to eliminate steam operation in freight service, with a similar exception for the handling of manifest trains, south of Roosevelt road to the city limits. The first two steps in this program were completed within the specified time and the third step has now been taken.

The Illinois Central now has six Diesel electric and four electric locomotives in service north of Roosevelt road. The addition of 11 Diesel electric locomotives will provide a fleet of 21 non-steam locomotives for freight service. This will enable the change to be made from steam operation at Markham Yard.

Supply Trade

Frank C. Jones, president of the **Okonite Company,** Passaic, N. J., was elected president of the **National Electrical Manufacturers Association** at a recent meeting held in Chicago.

The American Rolling Mill Company, Middletown, Ohio, has established a new sales office in the Citizens and Southern National Bank building, Atlanta, Ga. **C. M. Broome, Jr.,** is assistant district manager in charge of this office. The new Armco sales office will serve the states of Florida, South Carolina, Alabama, Georgia and parts of Tennessee and North Carolina, which territory was formerly covered by the Middletown district office.

Russell E. Colgate, chairman of the board of the **Tyson Roller Bearing Corporation,** Massillon, Ohio, has been elected president and treasurer succeeding **Charles E. Stuart,** who has resigned as president and treasurer, but will remain on the board of directors. **Ralph H. Maxson** is executive vice-president in charge of operations, **George C. McMullen,** vice-president in charge of sales, **George Neupower,** secretary, and **E. R. Ernest,** assistant treasurer and purchasing agent.

Roscoe Seybold, William G. Marshall and **Ralph Kelly** have been elected vice-presidents of the **Westinghouse Electric & Manufacturing Company,** all with headquarters at East Pittsburgh, Pa., as was announced in the *Railway Age* of November 3.

Roscoe Seybold was born on February 9, 1884, near Rockville, Ind. In 1907 he was graduated from Purdue University

Roscoe Seybold

with the degree of electrical engineer. He at once entered the student enginering course of the Westinghouse Electric & Manufacturing Company at East Pittsburgh, and was assigned during 1908 and 1909 to the Price department and his work since that time has been in connection with various phases of the company's accounting activities. From 1909 to 1922 he was manager of the Price section of the Power and Railway departments and then was appointed manager of price statistics and assistant to the general sales manager. In 1926 he was promoted to assistant to vice-president and general manager and in 1929 became assistant to the president serving since October, 1931, as controller of the same company.

William G. Marshall was born on March 17, 1888, at Pittsburgh, Pa. He was graduated from Washington and Jefferson College in 1911 and from the University of Pittsburgh Law School in 1914.

William G. Marshall

Before entering the service of the Westinghouse organization Mr. Marshall had a wide experience in the electrical industry. In 1915 he was manager of the Adjustment Department, Public Utilities, of the Philadelphia Company in Pittsburgh. In 1926

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LET'S GET DOWN TO FACTS

Mr. Daniel Willard's admirable interview as reported in "The Saturday Evening Post" of November 3, 1934 is eminently fair to all the various kinds of motive power in use on Railroads. He said:

> "It isn't that the limitations on railroad speed are in the power unit. That idea has been overworked.
>
> There isn't a fast train in operation in America today but could be run faster, if desired. No limit has been established to the speed at which steam locomotives can be made to go, even without streamlining or reduction in weight, if designed to that end. The limitations are practical considerations familiar to all railroad executives."

LIMA LOCOMOTIVE WORKS INCORPORATED LIMA OHIO

he was appointed director of personnel of the same organization and in 1929 he joined the Westinghouse Company as assistant to vice-president in charge of industrial relations of the company and various activities grouped therewith.

Ralph Kelly was born on August 16, 1888, at Boston, Mass. Immediately upon his graduation from Harvard University in 1909 he joined the Westinghouse organization as a design engineer. During the World War he served as a lieutenant in the United States Navy. After the

Ralph Kelly

armistice he joined the Westinghouse company and has held executive positions including manager of the southwest district and later manager of the central district. He left the latter position and was transferred to the headquarters of the company at East Pittsburgh as director of budgets which position he held at the time of his election as vice-president.

Trade Practices Complaints Committee

The National Recovery Administration has approved the following membership of the trade practice complaints committee of the railway brass car and locomotive journal bearings and castings manufacturing industry: W. H. Croft, president, and F. A. Croft, vice-president of the Magnus Company, Chicago; J. B. Strauch, president of the National Bearings & Metals Corporation, St. Louis, Mo.; Benjamin I. Kaufman, president of The Edna Brass Manufacturing Company, Cincinnati, Ohio; E. B. Vail, administration member, Chicago; and Vernon B. Bates, secretary, Chicago.

TRADE PUBLICATION

INDUSTRIAL CABLE.—A new 128-page publication of the General Electric Company, Schenectady, N. Y., which describes and lists all standard types of insulated wire and cable used for transmission, distribution and control, and used on or with electric equipment such as mining machinery, locomotives, arc welders, neon signs, etc. This catalog does not cover the paper-insulated types of cable, used principally for transmission of large blocks of power at the higher voltages. Such types are custom-built, and generally require the assistance of experienced engineers on both application and installation.

Financial

ATCHISON, TOPEKA & SANTA FE.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon a branch line extending from a point approximately half a mile northwest of Nutt, N. M., northwesterly to Lake Valley, approximately 12.7 miles.

BALTIMORE & OHIO.—*Trackage.*—The Interstate Commerce Commission has authorized the Railway Labor Executives' Association to intervene in the proceedings on this company's application for authority to acquire trackage rights over the Pittsburgh & Lake Erie between McKeesport, Pa., and Newcastle Junction.

CHICAGO & NORTH WESTERN.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $4,428,000 of first and refunding mortgage 5 per cent, series E, bonds; $2,214,000 of general mortgage 4½ per cent bonds of 1987; and an equivalent amount of interest-bearing interim certificates. A maturity of $4,428,000 of underlying bonds ($3,900,000 of Iowa, Minnesota & North Western first mortgage 3½ per cent and $528,000 of Minnesota & South Dakota first mortgage 3½ per cent bonds) falls on January 1. The North Western proposes to retire them by the payment of 50 per cent of their face value in cash to be borrowed from the Reconstruction Finance Corporation and by exchanging for the remainder an equal amount of general mortgage 4½ per cent bonds or interest-bearing interim certificates.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC—GREAT NORTHERN.—*Joint Operation.*—These companies have applied to the Interstate Commerce Commission for authority to abandon short stretches of their lines, construct connecting tracks and operate jointly as a single line portions of their lines between Colton, S. D., and Wentworth, 15.6 miles. It is proposed to abandon 19.4 miles and it is estimated that the saving will be $12,897 annually.

ILLINOIS CENTRAL.—*R. F. C. Loan.*—This company has applied to the Reconstruction Finance Corporation for an additional loan of $4,000,000, to be secured by the collateral now held by the corporation and $6,000,000 of Dubuque & Sioux City 4 per cent debenture bonds. Funds are desired for interest, principal of equipment trust certificates, and taxes.

LOUISIANA, SOUTHERN.—*Abandonment.*—The Interstate Commerce Commission has authorized this company and its receivers to abandon a portion of a line extending from Pointe-a-la-Hache to Bohemia, 4.8 miles.

QUEBEC EXTENSION.—*R. F. C. Loan for Construction.*—Division 4 of the Interstate Commerce Commission on October 19 approved this company's application for a loan of $3,000,000 from the Reconstruction Finance Corporation for the purpose of completing the construction of a proposed new line from Washburn, Me., to Lac Frontier, at the international boundary line, 112 miles, and for the purchase of equipment. The company was organized in 1924 and was granted a certificate authorizing the construction by the I. C. C. in 1925. A beginning of construction work was made in 1926 after which the commission extended the time in which construction should be completed to December 31, 1934. It is proposed to construct initially 92 miles of the proposed line, the eastern terminus to be at Portage, Me., where a connection would be made with a branch of the Bangor & Aroostook. At the western terminus connection would be made with the Quebec Central. The cost of the 92 miles, and equipment, was estimated at $4,168,030. Representatives of the company had agreed with five of the largest pulpwood operators in Maine for the formation of the Aroostook Pulpwood Tie & Lumber Company, to contract for stumpage and ship its product over the railroad. The proposed loan was approved only subject to several conditions, among them being that before any advance be made upon the loan the pulpwood company show contracts for the sale of not less than 125,000 cords of pulpwood annually for eight years, that the railroad agree to set aside a sinking fund for the retirement of the loan, and that it show in detail the expenditure of $1,168,030 to be provided by it. Richard H. Wheeler, 16 East Forty-first Street, New York City, is president of the railroad company.

SOUTHERN PACIFIC.—*Boat Line.*—The Interstate Commerce Commission has authorized the Petaluma & Santa Rosa Railroad (controlled through stock ownership by the Northwestern Pacific, a subsidiary of the Southern Pacific) to extend its line of railroad by boat or barge to Oakland, Calif., Alameda, Berkeley, and Richmond, 6.5 miles. The extension involves a diversion of the course of boats and barges now operated in freight service between Petaluma and San Francisco so as to serve additional cities.

WINCHESTER & WARDENSVILLE.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon that part of its line extending from Rock Enon, Va., to Wardensville, W. Va., 16.8 miles.

Average Prices of Stocks and of Bonds

	Nov. 7	Last week	Last year
Average price of 20 representative railway stocks..	35.49	34.67	38.07
Average price of 20 representative railway bonds..	73.74	74.09	65.03

Dividends Declared

Columbus & Xenia.—$1.00, payable December 10 to holders of record November 25.

Mobile & Birmingham.—4 Per Cent Preferred, $2.00, semi-annually, payable January 2 to holders of record December 1.

New York & Harlem.—$2.50, semi-annually; Preferred, $2.50, semi-annually, both payable January 2 to holders of record December 15.

Norfolk & Western.—$2.00, payable December 19 to holders of record November 30.

Northern Central.—$2.00, semi-annually, payable January 15 to holders of record December 31.

North Pennsylvania.—$1.00, quarterly, payable November 24 to holders of record November 19.

Rutland & Whitehall.—$1.50, payable November 15 to holders of record November 1.

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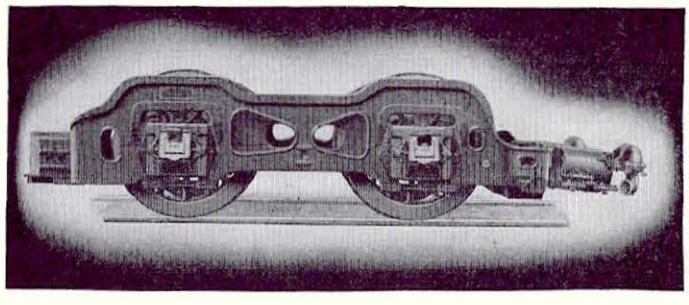
THE BOOSTER ENABLES *BALANCED* LOCOMOTIVE DESIGN

With the advent of The Locomotive Booster, balanced locomotive design took on a new meaning.

The two main cylinders now may be proportioned to provide only that capacity needed to haul full tonnage over the road at road speed after the train is under way.

For starting and accelerating to road speeds; and for getting over the ruling grades, the Booster provides the extra power needed.

In this way you have a locomotive working at its most economic capacity most of the time over the road and a lighter locomotive that is easy on track and low in maintenance.



No locomotive device is better than the replacement part used for maintenance. Genuine Franklin repair parts assure accuracy of fit and reliability of performance.

FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK CHICAGO MONTREAL

Railway Officers

EXECUTIVE

H. W. Beyers, vice-president in charge of traffic of the Chicago & North Western has assumed the duties of **A. F. Cleveland,** vice-president in charge of rates and divisions, who resigned to become vice-president in charge of traffic of the A. A. R.

Homer E. McGee, former vice-president and general manager of the Missouri-Kansas-Texas at Dallas, Tex., has been elected president of the Green Bay & Western, with headquarters at Green Bay, Wisc., succeeding **F. B. Seymour,** retired, and **Charles H. Smith,** general manager, has been elected vice-president.

Cleveland Appointed A.A.R. Vice-President in Charge of Traffic

John J. Pelley, president of the Association of American Railroads, announced on November 2 the appointment of Augustus F. Cleveland, of Chicago, as vice-president in charge of traffic of the Association of American Railroads, Mr. Cleveland has been vice-president in charge of rates and divisions of the Chicago & North Western. He was born on September 19,

Augustus F. Cleveland

1874, and graduated from Yale with an A. B. degree in 1898 and the Cleveland Law School with degree of LL.B., in 1912. Mr. Cleveland has been connected with the Chicago & North Western since 1898. In that year he became a solicitor for that road, and in 1899, was appointed general agent at Atlanta, Georgia, later serving in similar capacities in Cincinnati, Cleveland and Philadelphia. He became assistant general freight agent in 1912. After serving in that capacity for eight years, he was appointed assistant freight traffic manager in 1920 and in 1929 was made vice-president in charge of rates and divisions, remaining in that position until he was selected to be vice-president in charge of traffic of the new association.

Frederick A. Gaby, whose appointment as assistant to the president of the Canadian Pacific at Montreal was noted in the *Railway Age* of November 3, was born at Richmond Hill, Ont., and was educated

Frederick A. Gaby

in the public and technical schools of Toronto, Ont., and was graduated from the University of Toronto in 1904 (B. A. Sc. degree). Mr. Gaby became erecting engineer for the Canadian General Electric Company in 1904. During the next two years he was employed in a similar capacity with the Toronto-Niagara Power Company, and in 1906 he became chief assistant electrical engineer at Point du Bois, Winnipeg. He joined the Hydro-Electric Power Commission in 1907 and acted as assistant chief engineer until 1912. On the latter date he became chief engineer of that development, the position he held at the time of his recent appointment as assistant to the president of the C. P. R. Mr. Gaby is a member of the Toronto Board of Trade, the American Electric Railway Association, the American Bridge and Building Association, the Association of Railway Electrical Engineers, the American Society of Civil Engineers, the American Society of Mechancial Engineers, the International Engineering Congress, the Master Car Builders' Association, and the American Railway Engineering Association.

PURCHASES AND STORES

S. E. Keillor, assistant general storekeeper for the Canadian National, with headquarters at Winnipeg, Man., has been appointed general storekeeper of the Western region, with the same headquarters, succeeding **D. Robertson,** who has retired because of ill health. **S. Sneddon,** district storekeeper at Toronto, Ont., has been appointed assistant general storekeeper at Winnipeg to replace Mr. Keillor.

FINANCIAL, LEGAL AND ACCOUNTING

C. W. Powell, whose appointment as auditor of disbursements for the Seaboard Air Line was noted in the *Railway Age* of October 20, entered the service of that road in 1912, holding consecutively, with the exception of service in the United States Navy during the World War, various clerical and accounting positions until June, 1922, when he was appointed traveling auditor of disbursements. From 1924 to 1926 he was division auditor at Charleston, S. C., and Raleigh, N. C. He was appointed auditor of disbursements in September, 1926, and general auditor's assistant in January, 1929. He became general auditor in October, 1932, which position he held until his recent appointment.

F. J. Tague, whose appointment as auditor of freight receipts of the Boston & Maine, the Maine Central and the Portland Terminal was noted in the *Railway Age* of November 3, was born in Vanceboro, Me., in 1886. Mr. Tague attended the public schools of Vanceboro, Shaw Business College in Bangor and the University of St. Josephs at Memramcook, New Brunswick. His first railroad position was in the freight office of the Maine Central at Bangor. In 1907 he became clerk in the freight accounting department of the Boston & Maine at Boston,

F. J. Tague

Mass., and, after being promoted through various positions, was named special assistant to the auditor of freight receipts. He is chairman of the Credit Committee of the Boston & Maine Railroad Credit Union.

OPERATING

H. O. Halsted, superintendent of car service of the Pere Marquette, with headquarters at Detroit, Mich., has been appointed superintendent of transportation, with the same headquarters, succeeding **E. D. Hawley,** deceased.

H. W. Davidson, supervisor of agents on the Missouri-Kansas-Texas Lines, with headquarters at Denison, Tex., has been promoted to trainmaster at Smithville, Tex., succeeding **B. A. McDonald,** who has been transferred to Parsons, Kan., where he replaces **E. J. Grace.** Mr. Grace has been transferred to Muskogee, Okla., where he succeeds **Fred P. Blount,** whose promotion to superintendent was noted in the *Railway Age* for October 27.

T. C. Macnabb, whose appointment as general superintendent for the Canadian Pacific was noted in the *Railway Age* of November 3, was born in Toronto. After a few months spent in the freight depart-

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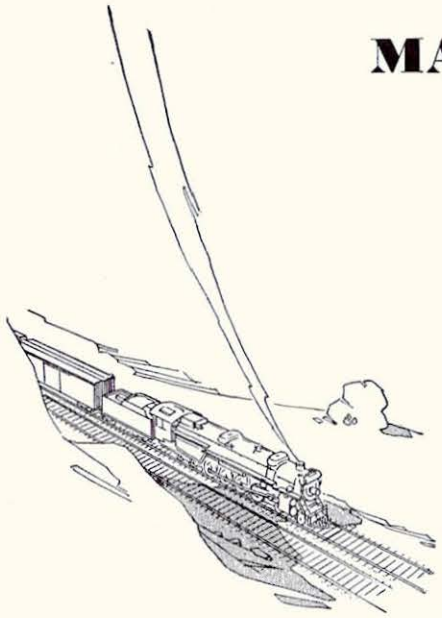
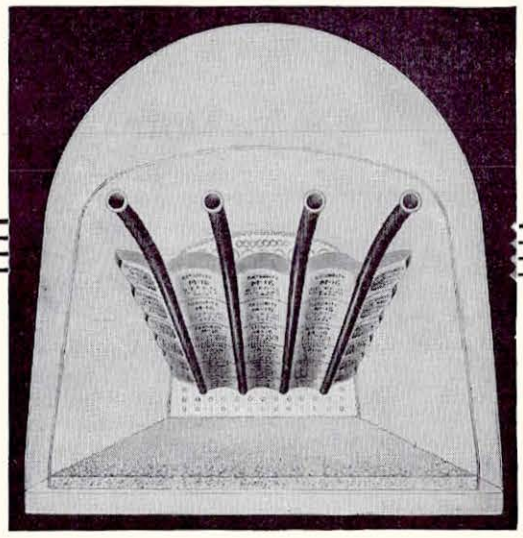
This LEADERSHIP HAS BEEN MAINTAINED FOR MORE THAN 25 YEARS





There's More to SECURITY ARCHES *Than Just Brick*

THE fundamental design of the Standardized Sectional Brick Arch, introduced 25 years ago by the American Arch Company, is still standard on all railroads.

And, every major improvement in locomotive arches, since the sectional brick was introduced, has been brought to the railroads by the American Arch Company.

In the design of the complete Brick Arch; in the quality of the refractory material; the Security Arch has maintained complete leadership.

Yet, while the Security Arch is one of the major factors in the economy of locomotive operation, it is also one of the least expensive.

HARBISON-WALKER REFRACTORIES CO.

Refractory Specialists

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AMERICAN ARCH CO.
INCORPORATED

Locomotive Combustion Specialists » » »

ment of the Canadian Pacific at Brandon, Man., he became a draughtsman in the engineering department at Winnipeg in

T. C. Macnabb

1902. In 1903 he was stationed at Field, B. C., and a year later at Lacombe, Alta., his first post as resident engineer, a position he held also at Saskatoon, Lethbridge and Battle River in succession. In 1908 Mr. Macnabb became assistant engineer of construction between Lanigan and Prince Albert, Sask., and held that position at Weyburn and Regina for six years. In 1915 he became divisional engineer at Moose Jaw, and two years later was made divisional superintendent of the Revelstoke division in the operating department. He was appointed superintendent of construction, Western Lines, in 1926. Mr. Macnabb is regarded as a pioneer in railway surveying from the air. He was the first railway engineer to survey the Great Bear district from northwestern Canada to the Rockies from the air. He is a member of the Engineering Institute of Canada, the American Society of Civil Engineers and the American Railway Engineering Association.

TRAFFIC

Ira F. Schwegel, whose appointment as general passenger agent for the Louisville & Nashville, with headquarters at New

Ira F. Schwegel

Orleans, La., was noted in the *Railway Age* of November 3, was born at Richmond, Ind., and entered railway service in 1888, as a telegraph operator on the Cincinnati, Hamilton & Dayton, (now part of the Baltimore & Ohio). In 1893, he was advanced to assistant city ticket agent at Dayton, Ohio, and three years later he was further promoted to city ticket agent at the same point. In 1898, Mr. Schwegel became traveling passenger agent with the same headquarters, leaving this company two years later to become district passenger agent for the Wisconsin Central (now part of the Minneapolis, St. Paul & Sault Ste. Marie), at Cincinnati, Ohio. Mr. Schwegel went with the Louisville & Nashville in 1906 as central passenger agent at Cincinnati, Ohio, serving in this position until 1918, when he was appointed district passenger agent at Montgomery, Ala., and Camp Sheridan. Two year later he was made general eastern passenger agent at New York. From 1925 until his recent appointment he served as assistant general passenger agent at Louisville, Ky.

MECHANICAL

Walter Budwell, general foreman of the Shaffers Crossing shop, of the Norfolk & Western, at Roanoke, Va., has been promoted to master mechanic of the Norfolk division, with headquarters at Crewe, Va., succeeding **W. J. Yingling,** deceased.

MOTOR TRANSPORT

Robert E. Mattson, roadmaster on the Northern Pacific, with headquarters at Lester, Wash., has been promoted to superintendent of operation of the Northern Pacific Transport Company (motor truck operating subsidiary of the Northern Pacific), with headquarters at Billings, Mont. Mr. Mattson was born on March 24, 1901, at Minneapolis, Minn., and was educated at the United States Naval Academy and Massachusetts Institute of Technology. He entered railway service in August, 1926, as a track apprentice on the Northern Pacific, at Duluth, Minn. In April of the following year he was advanced to assistant roadmaster, with the same headquarters, and in December, 1927, he was appointed assistant supervisor of bridges and buildings, with headquarters at Fargo, N. D. In April, 1930, Mr. Mattson was further advanced to roadmaster at Fargo, and later served in this position at Mandan, N. D., and Lester, Wash., being located at the latter point at the time of his recent appointment as superintendent of operation of the Northern Pacific Transport Company.

OBITUARY

J. F. Sheehy, president and general manager of the Chicago Short Line at Chicago, died on October 30.

William J. Given, division storekeeper on the Mobile & Ohio, with headquarters at Jackson, Tenn., died on October 29 at his home at Jackson.

Edward G. Aiken, former assistant superintendent on the New York, New Haven & Hartford, died in Norwalk, Conn., on October 26, at the age of 72. Mr. Aiken, who retired in 1931, had been in railroad service for 40 years.

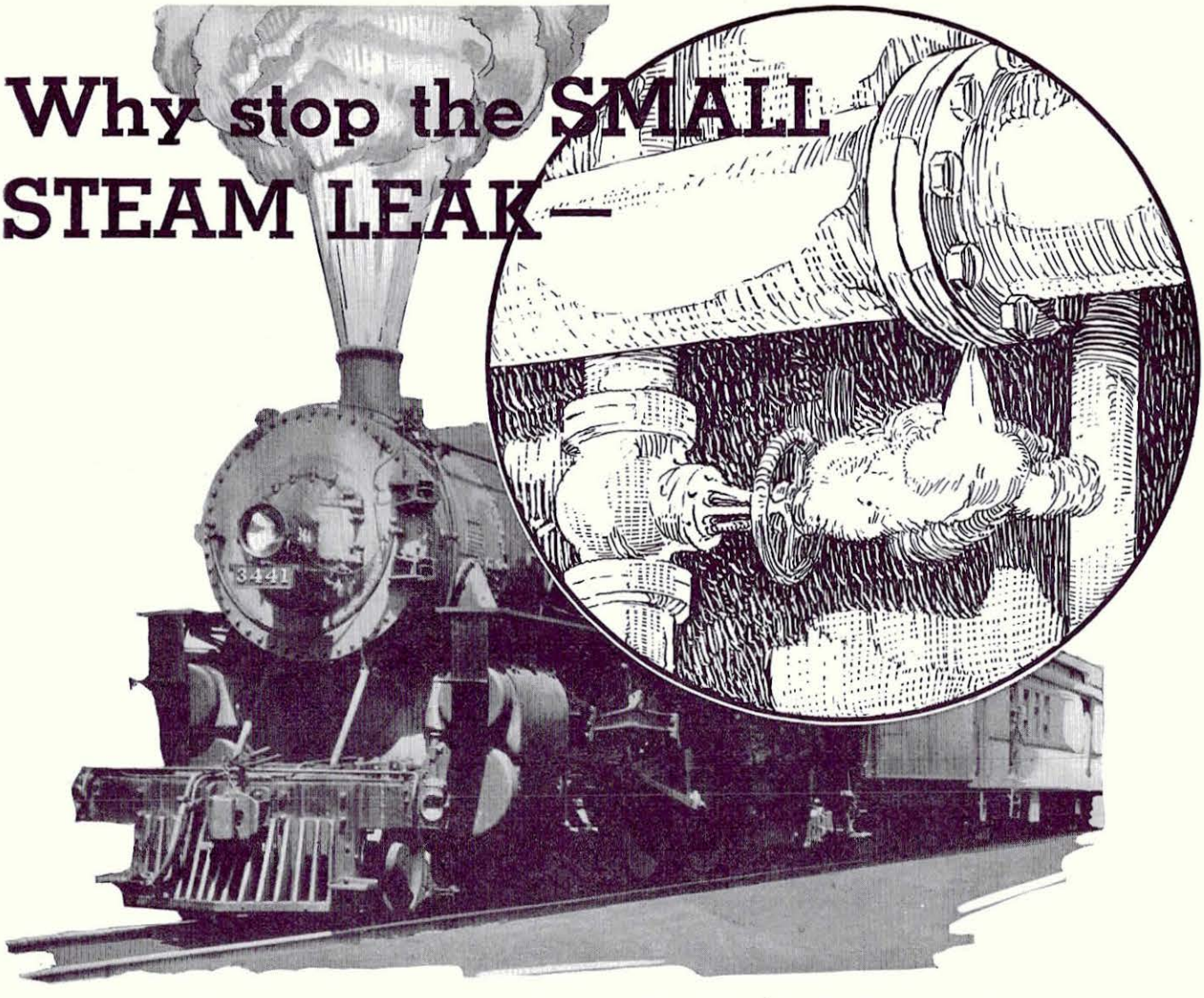
Charles C. Cameron, Jr., foreign freight agent for the Illinois Central at St. Louis, Mo., died there of pneumonia on November 1.

L. F. Newton, superintendent of the Tacoma division of the Northern Pacific, with headquarters at Tacoma, Wash., died of a heart attack on November 1, at Yakima, Wash.

Colonel William Ainslie Colston, vice-president in charge of corporate relations of the New York, Chicago & St. Louis, died November 6 at his home in Shaker Heights, a suburb of Cleveland, Ohio. He was 61 years old. Death was sudden. He had been at work in his office in the Terminal Tower, Cleveland, during the day, but soon after arriving home that evening had complained of feeling ill. He died a few hours later. Col. Colston entered railway service in 1891 with the Louisville & Nashville as mail messenger. After a few weeks he was transferred to the accounting department, where his work, initially, was to estimate earnings for each run of passenger trains. He was promoted through various clerical positions to inspector of agencies, assistant auditor of receipts, and assistant comptroller, successively. In the latter capacity, he had complete charge of the company's accounts and statistics. During part of his 19 years' service in the accounting department, Col. Colston studied law at the Jefferson School of Law, in Louisville, where he was graduated in 1907. About three years later he was transferred to the law department as commerce attorney in charge of the newly-created commerce section of that department. His next promotion was to the position of general solicitor, in active charge of all of the company's legal affairs, under supervision of the general counsel. Col. Colston served in the Spanish-American War as captain of volunteers. He served also in the Mexican border service and in the World War. In the latter he was colonel of infantry and later colonel of field artillery in this country and in France. In 1920, Col. Colston resigned the office of general solicitor of the Louisville & Nashville to become director of finance with the Interstate Commerce Commission. In 1922, he was appointed vice-president and general counsel of the Nickel Plate. He had charge of the application of that road for Interstate Commerce Commission authority to consolidate with the Clover Leaf and Lake Erie & Western railroads. The petition was approved and the consolidation effected in 1923. Again in 1925, Col. Colston had charge of the legal details of the application of the Nickel Plate for unification with related Van Sweringen-controlled eastern lines. Mr. Colston was an authority on transportation law and railway regulation, as well as on the financial and the intercorporate aspects of the railroad industry. He was the author of a book entitled "Concentration of Control" which was published in 1925 and treated definitively upon the results of the Congressional policy of railroad unification as expressed in the Transportation Act.

Tables of Revenues and Expenses of Railways begin on next left-hand page

Why stop the SMALL STEAM LEAK—



. . and permit the LARGE LEAK?

LET a steam pipe in the shop spring a leak and nine chances out of ten it will be stopped almost immediately.

But a locomotive without a feed water heater is like a leaky steam pipe in principle . . . . . only the loss of heat units through exhaust steam going up the stack usually is in much greater proportion and consequently is a far more serious leak.

This waste of valuable heat units is unnecessary because it is prevented easily by an Elesco feed water heater. A substantial portion of the otherwise wasted heat in the exhaust steam is efficiently returned to the boiler through the medium of preheated feed water, thus saving fuel and increasing capacity. Feed water heating, therefore, is an important need for greater locomotive operating economy.

Elesco feed water heaters, by keeping the stack losses to a minimum, are providing better fuel rates and more boiler capacity on nearly 4000 locomotives. Why not on yours, too? The facts will be cheerfully sent to you.

THE SUPERHEATER COMPANY

Representative of AMERICAN THROTTLE COMPANY, Inc.

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Superheaters - Feed Water Heaters - Exhaust Steam Injectors - Superheated Steam Pyrometers - American Throttles

Revenues and Expenses of Railways

MONTH OF SEPTEMBER AND NINE MONTHS OF CALENDAR YEAR 1934

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of: Way and structures	Equipment	Traffic	Transportation	General	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income	Net ry. operating income, 1933
Akron, Canton & Youngstown	Sept.	171	$123,091	$48	$129,543	$27,687	$11,822	$7,894	$39,711	$10,079	$97,027	74.9	$32,516	$22,841	$10,928	$24,630
	9 mos.	171	1,227,577	335	1,307,724	189,553	133,064	68,350	393,730	74,991	859,085	65.7	448,639	354,255	219,554	252,250
Alton	Sept.	949	870,469	175,854	1,204,534	288,881	166,356	43,049	432,343	38,443	980,339	81.4	224,195	146,786	—6,198	172,965
	9 mos.	950	7,264,269	1,298,533	9,922,436	1,544,756	1,497,465	407,703	3,843,720	377,681	7,765,291	78.3	2,157,145	1,501,246	229,913	1,209,814
Atchison, Topeka & Santa Fe	Sept.	9,532	7,681,502	986,118	9,607,192	1,010,167	2,282,330	304,690	3,129,190	503,814	7,245,336	75.4	2,361,856	1,663,161	1,767,689	1,852,749
	9 mos.	9,540	65,108,540	8,460,926	80,638,394	9,884,290	19,371,758	2,740,078	26,993,038	3,576,925	62,596,849	77.6	18,041,545	10,936,463	11,907,534	7,779,407
Gulf, Colorado & Santa Fe	Sept.	1,918	874,880	54,416	1,003,567	153,551	146,287	35,638	404,737	71,113	809,849	80.7	193,718	108,256	49,071	65,898
	9 mos.	1,918	7,742,427	433,249	8,845,689	1,697,891	2,019,944	410,591	3,427,920	592,979	8,146,404	92.1	699,285	—47,806	—702,546	—532,929
Panhandle & Santa Fe	Sept.	1,878	690,055	27,206	766,291	77,862	91,777	14,404	217,642	40,127	441,812	57.7	324,479	279,389	213,621	136,427
	9 mos.	1,878	6,024,279	227,095	6,676,259	771,253	1,249,141	149,774	1,891,666	303,254	4,364,348	65.4	2,311,911	1,910,219	1,269,058	702,260
Atlanta & West Point	Sept.	93	74,767	17,129	111,822	17,676	24,060	6,677	48,932	7,653	107,039	95.7	4,783	—2,427	—6,840	—29,474
	9 mos.	93	722,137	152,947	1,044,818	174,941	236,973	60,263	442,429	69,224	1,003,478	96.0	41,340	—23,610	—117,316	—169,286
Western of Alabama	Sept.	133	82,715	18,522	115,121	20,351	28,083	6,718	41,897	5,820	104,605	90.9	10,516	2,517	14,945	—22,835
	9 mos.	133	681,768	157,685	959,131	180,479	277,404	61,050	395,273	62,401	992,161	103.4	—33,030	—105,081	—46,367	—64,966
Atlanta, Birmingham & Coast	Sept.	639	154,876	8,993	190,469	40,367	44,796	20,255	90,499	21,989	227,799	119.6	—37,330	—50,087	—54,373	—39,474
	9 mos.	639	1,820,892	61,292	2,135,297	366,656	452,800	190,309	886,755	153,724	2,137,308	100.1	—2,011	—115,203	—215,347	—182,481
Atlantic Coast Line	Sept.	5,146	1,944,273	252,554	2,564,971	386,006	606,639	103,669	1,083,241	128,854	2,321,351	90.5	243,620	93,340	146,168	—188,860
	9 mos.	5,145	22,824,601	4,011,051	30,310,980	3,813,640	5,917,639	1,007,650	11,183,128	1,155,927	23,342,069	77.0	6,968,911	3,762,746	3,160,489	3,208,975
Charleston & Western Carolina	Sept.	342	119,410	1,841	125,131	21,370	23,371	5,375	47,638	4,955	102,709	82.1	22,422	5,422	6,222	21,150
	9 mos.	342	1,419,863	12,289	1,470,389	208,993	222,636	50,666	479,931	43,070	1,005,296	68.4	465,093	311,968	290,306	348,728
Baltimore & Ohio	Sept.	6,386	9,345,338	900,003	11,005,089	780,313	1,905,455	352,168	3,765,633	544,663	7,455,540	67.8	3,549,549	2,897,419	2,415,238	3,379,018
	9 mos.	6,385	89,195,911	7,716,728	103,671,596	9,139,970	21,990,237	3,209,041	35,748,023	5,031,687	75,999,736	73.3	27,671,860	21,627,086	18,306,556	22,679,436
Staten Island Rapid Transit	Sept.	23	44,460	75,574	129,860	11,055	13,067	1,751	76,379	12,751	115,003	88.6	14,857	—1,793	—18,521	3,186
	9 mos.	23	466,047	746,184	1,287,332	104,524	117,551	15,582	728,125	116,056	1,081,838	84.0	205,494	63,387	—89,220	29,647
Bangor & Aroostook	Sept.	603	273,536	11,374	291,388	85,836	76,909	4,269	83,286	30,042	281,037	96.5	10,351	—12,255	6,007	58,711
	9 mos.	603	4,019,016	221,687	4,407,460	855,873	785,896	42,977	1,054,600	220,205	2,967,381	67.3	1,440,079	1,079,127	1,083,941	1,205,953
Bessemer & Lake Erie	Sept.	225	830,028	682	836,082	89,552	259,431	11,102	155,935	46,020	562,012	67.2	274,070	252,860	255,745	393,771
	9 mos.	225	6,561,701	6,587	6,640,278	977,188	2,499,100	99,169	1,293,599	329,033	5,196,585	78.3	1,443,693	1,195,018	1,281,890	1,602,009
Boston & Maine	Sept.	2,038	2,225,379	577,567	3,340,470	455,495	363,329	60,818	1,351,035	161,650	2,402,752	71.9	937,718	735,194	596,241	808,125
	9 mos.	2,049	21,915,380	5,228,056	31,728,897	4,626,462	4,774,465	537,100	12,735,944	1,515,561	24,277,920	76.5	7,450,977	5,650,788	4,192,169	5,592,628
Brooklyn Eastern District Terminal	Sept.	11.27	81,312	.....	83,173	5,300	9,588	254	26,057	5,852	47,051	56.6	36,122	29,522	29,522	33,224
	9 mos.	11.27	699,357	.....	717,770	40,581	76,302	3,037	234,962	46,319	401,201	55.9	316,569	257,713	257,713	265,443
Burlington-Rock Island	Sept.	280	61,004	3,992	69,542	17,858	12,282	4,074	40,341	9,694	84,249	121.1	—14,707	—19,516	—29,951	12,925
	9 mos.	280	517,653	21,985	577,828	114,690	118,360	34,643	337,950	69,008	674,647	116.8	—96,819	—140,740	—217,266	—80,032
Cambria & Indiana	Sept.	37	78,903	.....	79,095	8,468	67,607	365	12,904	6,573	95,917	121.27	—16,822	—27,231	39,621	75,850
	9 mos.	37	767,307	.....	769,154	68,565	384,058	3,457	105,837	61,172	623,089	81.00	146,065	22,465	603,440	711,443
Canadian Pacific Lines in Maine	Sept.	233	71,326	16,195	100,784	31,905	23,504	8,926	47,128	2,510	114,617	113.7	—13,833	—19,833	—34,261	—15,633
	9 mos.	233	1,281,560	149,788	1,554,351	317,862	276,633	79,315	598,833	50,713	1,329,308	85.5	225,043	167,001	—19,702	—97,288
Canadian Pacific Lines in Vermont	Sept.	85	43,177	10,627	67,026	13,977	16,364	3,968	50,579	7,532	92,683	138.3	—25,657	—30,757	—47,968	—25,772
	9 mos.	85	480,341	95,160	707,585	141,112	178,833	35,358	475,954	40,067	873,976	123.5	—166,391	—212,306	—360,971	—302,799
Central of Georgia	Sept.	1,926	821,971	90,864	1,033,242	120,064	196,135	48,480	425,081	91,533	884,019	85.6	149,223	76,261	51,979	132,522
	9 mos.	1,926	7,958,767	869,365	9,973,113	1,204,361	2,222,732	437,410	3,979,094	667,350	8,553,684	85.8	1,419,429	761,208	418,777	539,252
Central New Jersey	Sept.	689	1,747,891	398,985	2,312,527	137,120	336,169	42,926	938,819	137,519	1,607,822	69.5	704,705	189,957	107,978	293,141
	9 mos.	689	16,948,488	3,489,598	21,839,808	1,287,880	4,034,670	399,441	8,748,072	886,972	15,491,120	70.9	6,348,688	3,281,723	2,418,595	1,965,608
Central Vermont	Sept.	455	309,523	48,286	399,236	46,187	68,717	13,015	183,790	28,683	340,418	85.3	58,818	42,907	41,825	72,607
	9 mos.	455	3,055,724	360,434	3,782,324	671,675	782,310	118,099	1,753,979	197,697	3,524,072	93.2	258,252	114,194	35,201	248,581
Chesapeake & Ohio	Sept.	3,142	8,725,580	265,330	9,389,642	939,702	1,510,871	164,222	2,061,919	291,484	4,981,308	53.1	4,408,334	3,546,640	3,377,968	4,228,398
	9 mos.	3,133	77,109,764	2,161,040	82,396,949	8,614,379	15,092,720	1,488,061	18,175,462	2,534,891	46,007,716	55.8	36,389,233	28,583,384	27,462,708	27,073,693
Chicago & Eastern Illinois	Sept.	938	813,535	148,105	1,088,221	145,565	148,685	49,197	410,774	74,646	837,619	77.0	250,602	200,434	74,400	103,532
	9 mos.	938	7,470,611	922,428	9,507,845	1,185,503	1,484,394	448,513	3,796,601	538,850	7,499,425	78.9	2,008,420	1,443,956	337,501	—3,696
Chicago & Illinois Midland	Sept.	131	283,769	1,113	292,326	36,161	54,800	14,788	65,629	19,246	190,624	65.2	101,702	83,374	89,872	74,196
	9 mos.	131	2,082,943	9,244	2,160,982	262,480	451,380	137,388	561,705	149,493	1,562,449	72.3	598,533	520,758	565,871	697,013
Chicago & North Western	Sept.	8,442	5,450,731	880,573	7,060,094	960,795	1,189,840	187,679	2,562,564	390,098	5,325,506	75.4	1,734,588	1,233,615	898,717	1,275,382
	9 mos.	8,442	44,538,767	6,614,611	57,477,761	8,335,537	12,140,137	1,501,027	22,189,876	2,671,506	47,099,658	81.9	10,378,103	5,538,463	3,575,245	4,243,525
Chicago, Burlington & Quincy	Sept.	9,145	5,993,050	685,607	7,413,743	949,036	1,056,258	200,088	2,503,216	414,828	5,177,161	69.8	2,236,582	1,848,926	1,444,321	1,599,584
	9 mos.	9,177	47,901,720	5,022,705	59,282,388	7,571,135	9,398,801	1,932,229	21,115,354	2,826,809	43,278,687	73.0	16,003,701	11,240,958	8,496,238	8,676,900
Chicago Great Western	Sept.	1,518	1,330,249	55,756	1,527,083	193,321	191,048	51,550	544,979	74,230	1,055,956	69.1	471,127	434,299	208,708	213,544
	9 mos.	1,518	10,286,554	393,603	11,524,351	1,488,186	1,706,972	460,368	4,363,918	473,873	8,484,703	73.6	3,039,648	2,556,395	858,140	693,250
Chicago, Indianapolis & Louisville	Sept.	644	537,303	61,196	673,915	74,094	136,648	24,507	260,596	37,121	538,755	79.9	135,160	87,153	—9,749	55,192
	9 mos.	644	4,456,196	429,268	5,557,380	514,008	1,282,143	224,540	2,316,613	239,679	4,627,209	83.3	930,171	508,487	—344,254	—99,513

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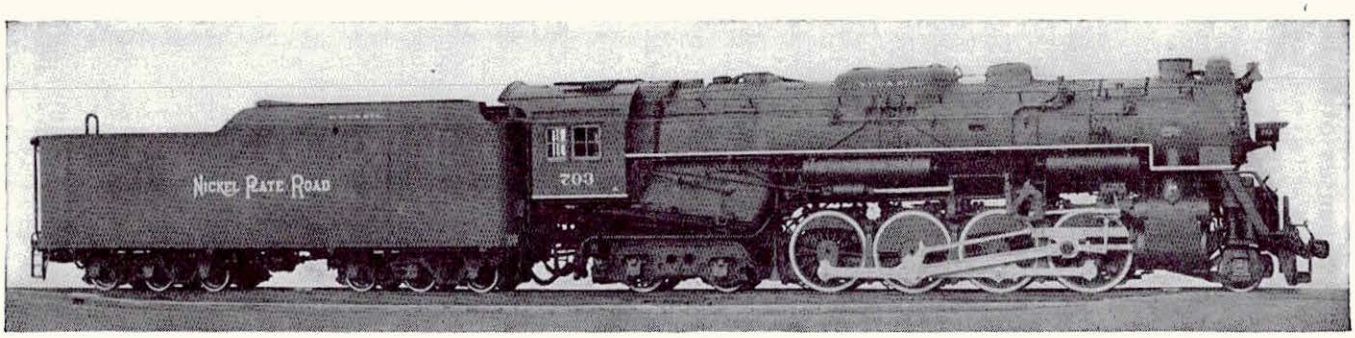
NEW POWER
ON THE NICKEL PLATE



Weight on Drivers, 254,000 pounds; Weight of Engine, 416,000 pounds; Cylinders, 25 x 34 inches; Diameter of Drivers, 69 inches; Boiler Pressure, 245 pounds; Maximum Tractive Power, 64,100 pounds.

OPERATING RECEIPTS 1933 VS. 1929—CLASS 1 ROADS

	1933	1929
Freight	$2,492,738,042	$4,825,622,121
Passenger	329,341,854	873,564,246

Freight traffic at all times is by far the main and most important source of railroad revenue. And speed is becoming a very influential factor in this traffic also.

In fact, the Railway Age, on December 23, 1933, made the statement that 73% of all the tonnage moved by trucks does so partly because that service is faster than railway service.

Why not therefore analyze the possibilities of regaining much freight transportation with modern high-speed freight locomotives?

AMERICAN LOCOMOTIVE COMPANY

50 CHURCH STREET · NEW YORK · N.Y.

Revenues and Expenses of Railways

MONTH OF SEPTEMBER AND NINE MONTHS OF CALENDAR YEAR 1934—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	General	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income	Net ry. operating income, 1933
Chicago, Milw., St. Paul & Pacific	Sept.	11,162	$6,977,724	$578,602	$8,347,632	$1,432,452	$1,435,989	$212,781	$2,920,870	$403,123	$6,427,331	77.0	$1,920,301	$1,447,575	$943,826	$960,277
	9 mos.	11,172	55,012,204	4,097,465	65,666,189	9,444,199	13,019,117	1,841,796	24,722,780	2,588,230	51,852,887	79.0	13,813,302	8,784,591	4,851,442	6,440,115
Chicago, Rock Island & Pacific	Sept.	7,581	4,568,382	547,042	5,635,944	633,991	1,203,297	185,752	2,233,730	378,605	4,703,446	83.5	932,498	600,271	321,939	376,589
	9 mos.	7,602	39,146,010	4,191,816	48,069,642	5,077,639	11,286,756	1,615,875	19,366,029	2,689,030	40,581,322	84.4	7,488,320	3,863,844	1,347,794	2,750,067
Chicago, Rock Island & Gulf	Sept.	721	259,264	20,119	282,906	52,764	37,854	15,970	109,596	25,042	243,419	86.0	39,487	18,501	—24,173	—78,377
	9 mos.	721	2,506,883	175,623	2,725,010	379,706	337,423	141,688	1,004,078	179,882	2,064,917	75.8	660,093	470,967	—31,744	—314,672
Chicago, St. Paul, Minn. & Omaha	Sept.	1,654	1,203,898	126,919	1,425,892	182,000	192,342	31,101	626,407	94,464	1,134,859	79.6	291,033	214,765	132,415	240,810
	9 mos.	1,662	9,241,146	1,017,154	11,110,578	1,228,364	1,757,066	288,620	5,092,802	653,031	9,098,277	81.9	2,012,301	1,335,785	693,035	1,198,717
Clinchfield Railroad	Sept.	309	359,626	3,727	368,057	35,264	99,986	15,353	77,817	13,975	242,395	65.9	125,662	80,646	112,983	213,001
	9 mos.	309	3,858,086	30,191	3,934,047	352,668	896,789	140,081	736,920	121,076	2,247,534	57.1	1,686,513	1,311,429	1,556,609	1,354,292
Colorado & Southern	Sept.	1,023	457,044	35,397	542,034	54,772	93,192	12,058	203,083	39,379	404,495	74.6	137,539	82,057	57,938	92,683
	9 mos.	1,027	3,396,010	242,353	4,044,274	609,024	830,601	104,352	1,542,389	302,166	3,395,995	84.0	648,279	143,753	—15,127	—99,231
Fort Worth & Denver City	Sept.	804	332,041	39,452	433,642	45,410	66,038	14,585	165,608	39,212	333,731	77.0	99,911	70,249	29,402	79,412
	9 mos.	804	3,494,194	316,427	4,329,021	325,873	605,661	144,136	1,309,786	300,322	2,702,843	62.4	1,626,178	1,355,282	1,066,134	884,522
Columbus & Greenville	Sept.	167	68,544	7,138	82,557	18,376	11,610	3,741	32,852	8,610	75,189	91.1	7,368	541	1,863	8,431
	9 mos.	167	518,036	50,348	616,473	127,364	99,555	32,711	269,919	79,265	608,804	98.8	7,669	—20,938	—7,263	49,990
Delaware & Hudson	Sept.	848	1,530,396	125,704	1,767,366	277,118	504,541	46,514	700,745	176,300	1,710,379	96.8	56,987	—10,953	—10,010	475,709
	9 mos.	848	15,740,601	896,220	17,580,321	2,552,629	4,759,009	435,205	6,801,349	1,288,395	15,892,645	90.4	1,687,676	1,052,236	1,155,128	394,319
Delaware, Lackawanna & Western	Sept.	992	2,528,757	537,693	3,514,103	409,717	626,637	101,875	1,544,661	156,720	2,855,472	81.3	658,631	307,871	300,137	558,131
	9 mos.	992	24,737,643	4,925,652	33,781,776	3,018,004	6,602,154	971,095	14,724,952	1,380,158	26,890,458	79.6	6,891,318	3,733,036	3,531,098	2,614,567
Denver & Rio Grande Western	Sept.	2,636	1,850,195	116,096	2,064,382	250,038	401,454	47,248	671,026	107,516	1,480,467	71.7	583,915	433,706	314,222	637,306
	9 mos.	2,534	12,093,353	717,734	13,623,704	1,603,280	3,212,434	408,462	4,482,578	766,341	10,523,693	77.2	3,100,011	1,747,439	1,509,332	1,795,921
Denver & Salt Lake	Sept.	232	223,492	3,534	242,492	16,215	19,553	1,589	40,489	13,940	90,903	37.5	151,589	138,589	173,678	181,603
	9 mos.	232	886,679	32,404	1,010,496	111,887	185,060	14,065	220,957	105,330	631,222	62.5	379,274	257,236	415,569	477,774
Detroit & Mackinac	Sept.	242	64,328	2,581	74,033	9,440	7,859	770	21,715	4,443	44,233	59.7	29,800	27,382	25,632	8,833
	9 mos.	242	383,300	25,479	462,161	88,458	70,210	7,664	187,731	32,926	386,947	83.7	75,214	100,614	88,454	14,954
Detroit & Toledo Shore Line	Sept.	50	168,373	.....	169,490	15,838	21,586	6,514	51,849	10,093	105,864	62.5	63,626	50,680	13,517	47,512
	9 mos.	50	2,207,535	.....	2,221,635	176,030	198,134	61,471	558,925	63,924	1,058,386	47.6	1,163,249	971,806	567,262	398,883
Detroit, Toledo & Ironton	Sept.	472	378,962	273	391,319	42,593	61,777	9,659	101,531	22,964	235,175	60.1	156,144	112,360	99,899	129,377
	9 mos.	472	4,441,040	2,430	4,585,504	412,089	618,880	88,273	1,032,993	167,356	2,287,041	49.9	2,298,463	1,820,617	1,615,065	798,610
Duluth, Missabe & Northern	Sept.	560	1,195,664	4,362	1,383,451	122,242	197,116	2,971	241,437	52,100	615,387	44.5	768,064	774,434	776,313	1,673,614
	9 mos.	563	7,104,116	29,552	8,241,218	1,165,053	1,941,047	29,018	1,737,705	376,113	5,248,405	63.7	2,992,813	2,329,220	2,336,441	3,530,353
Duluth, Winnipeg & Pacific	Sept.	178	76,574	2,009	81,455	19,735	20,931	1,883	35,093	6,264	83,824	102.9	—2,369	—6,887	—20,557	21,315
	9 mos.	178	601,655	23,294	649,947	175,818	161,954	17,139	307,730	47,688	710,092	109.3	—60,145	—94,136	—48,557	40,318
Elgin, Joliet & Eastern	Sept.	446	604,889	29	676,560	82,093	170,916	12,675	302,575	58,681	626,868	92.7	49,692	—31,915	—66,016	113,540
	9 mos.	446	7,122,659	38	7,930,340	841,216	1,955,523	111,843	3,032,789	428,929	6,369,973	80.3	1,560,367	824,424	470,894	701,230
Erie	Sept.	2,304	5,260,670	470,371	6,201,088	694,432	1,264,866	160,859	2,216,944	280,226	4,616,655	74.4	1,584,433	1,250,868	892,441	1,489,660
	9 mos.	2,312	48,754,858	3,986,990	57,176,520	5,434,070	11,547,203	1,441,100	20,191,286	2,515,749	41,179,800	72.0	15,996,720	12,983,316	9,977,774	9,417,115
Chicago & Erie	Sept.							(INCLUDED IN ERIE)								
	9 mos.							(INCLUDED IN ERIE)								
New Jersey & New York	Sept.	45	12,743	47,115	61,638	6,723	25,711	1,203	43,498	3,217	80,352	130.4	—18,714	—22,864	—37,841	—24,298
	9 mos.	45	141,718	471,499	630,713	68,662	216,945	11,063	440,102	31,691	768,463	121.8	—137,750	—175,139	—319,578	—241,448
N. Y., Susquehanna & Western	Sept.	215	231,435	23,739	268,632	42,382	51,572	4,430	106,068	12,119	216,568	80.6	52,064	28,575	14,639	16,110
	9 mos.	215	2,382,895	235,451	2,757,192	311,433	522,847	39,184	1,082,856	107,986	2,064,300	74.9	692,892	478,870	315,819	199,341
Florida East Coast	Sept.	812	223,433	55,542	330,145	105,324	126,100	18,225	145,932	50,199	449,560	136.2	—119,415	—194,581	—213,960	—226,906
	9 mos.	824	3,778,053	1,398,515	5,915,672	1,000,223	1,164,696	180,294	1,802,828	358,417	4,568,624	77.2	1,347,048	705,460	323,262	83,893
Fort Smith & Western	Sept.	249	68,977	1,051	73,074	15,635	10,598	6,714	21,024	4,028	58,103	79.5	14,971	12,967	5,984	6,075
	9 mos.	249	456,892	9,415	499,338	128,066	87,692	47,808	167,925	36,143	462,998	92.7	36,340	21,108	—25,295	—31,499
Georgia Railroad	Sept.	329	221,711	16,144	262,105	24,161	47,897	16,969	107,643	12,849	210,063	80.1	52,042	46,763	54,579	54,507
	9 mos.	329	2,040,105	128,698	2,371,660	246,382	500,236	146,857	1,002,344	117,902	2,017,405	85.0	354,255	306,650	358,352	429,498
Georgia & Florida	Sept.	465	63,224	3,150	71,074	15,939	16,692	6,858	30,535	7,087	77,094	108.5	—6,020	—12,024	—9,242	—1,561
	9 mos.	465	737,830	21,787	804,391	189,527	159,975	67,773	308,598	53,415	779,827	96.9	24,564	—23,909	—39,544	5,062
Grand Trunk Western	Sept.	1,006	1,011,339	81,650	1,192,506	225,626	253,312	32,682	561,528	115,337	1,187,724	99.6	4,782	—67,206	—117,042	—95,000
	9 mos.	1,007	11,865,207	596,774	13,455,035	1,932,645	2,756,695	297,679	5,584,882	787,784	11,386,774	84.6	2,068,261	1,394,272	491,994	—581,205
Canadian Nat'l Lines in New Eng.	Sept.	172	75,198	7,887	92,358	23,226	17,912	2,700	45,418	13,111	102,659	111.1	—10,301	—22,867	—59,803	—43,906
	9 mos.	172	683,926	62,664	819,879	226,486	181,164	24,911	469,402	85,669	991,718	120.9	—171,839	—272,799	—600,050	—569,915
Great Northern	Sept.	8,328	6,891,076	414,956	7,884,882	648,265	976,597	156,001	2,192,226	292,068	4,330,810	54.9	3,554,072	2,981,436	2,733,863	2,466,508
	9 mos.	8,349	43,953,725	3,170,305	51,748,698	6,871,900	9,056,653	1,482,366	16,733,245	1,980,671	36,646,409	70.8	15,102,289	10,135,334	8,872,896	7,888,378
Green Bay & Western	Sept.	233	99,530	780	106,182	24,450	14,760	4,832	38,096	4,868	87,006	81.9	19,176	14,002	12,163	6,597
	9 mos.	233	753,486	8,594	802,659	178,109	163,036	41,567	351,520	29,568	763,593	95.1	39,066	—9,024	—22,653	53,184

Revenues and Expenses of Railways

MONTH OF SEPTEMBER AND NINE MONTHS OF CALENDAR YEAR 1934—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	General	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income	Net ry. operating income, 1933
Gulf & Ship Island	Sept.	259	$66,662	$9,056	$86,176	$17,901	$16,380	$2,636	$41,717	$4,171	$82,855	96.1	$3,321	—$12,270	—$20,203	—$20,998
	9 mos.	260	681,678	66,682	862,519	135,821	139,322	22,460	410,806	42,328	752,118	87.2	110,401	—30,740	—118,496	—122,361
Gulf, Mobile & Northern	Sept.	961	358,898	20,172	397,941	54,965	63,808	32,080	132,123	31,376	312,871	78.62	85,070	53,957	8,008	107,981
	9 mos.	961	3,550,274	166,176	3,893,951	507,105	578,438	305,409	1,211,431	228,556	2,822,949	72.50	1,071,002	791,779	346,382	612,988
Illinois Central	Sept.	4,973	5,284,265	834,126	6,583,016	658,355	1,367,501	183,700	2,441,567	324,660	5,006,864	76.1	1,576,152	1,123,099	909,229	1,294,041
	9 mos.	5,006	47,501,436	6,305,027	58,933,825	5,059,441	12,070,102	1,611,454	22,012,863	2,902,066	43,941,976	74.6	14,991,849	11,072,117	9,189,869	10,684,957
Yazoo & Mississippi Valley	Sept.	1,636	1,115,073	68,930	1,262,086	99,261	166,792	26,716	433,240	50,975	776,720	61.5	485,366	359,717	236,039	109,207
	9 mos.	1,641	7,430,530	543,777	8,612,169	719,498	1,377,212	231,447	3,602,755	452,668	6,387,276	74.2	2,224,893	1,256,192	353,204	636,639
Illinois Central System	Sept.	6,609	6,399,338	903,056	7,845,102	757,616	1,534,293	210,416	2,874,807	375,635	5,783,584	73.7	2,061,518	1,480,904	1,156,845	1,412,683
	9 mos.	6,648	54,931,966	6,848,804	67,545,994	5,778,939	13,447,314	1,842,901	25,615,618	3,354,734	50,329,252	74.5	17,216,742	12,310,838	9,634,004	11,407,359
Illinois Terminal	Sept.	525	305,773	56,831	398,070	45,590	55,593	13,575	137,096	22,526	275,820	69.29	122,250	96,972	80,119	109,761
	9 mos.	525	2,880,133	505,059	3,659,161	440,075	535,951	130,343	1,301,748	156,542	2,570,356	70.24	1,088,805	855,346	700,717	658,817
Kansas City Southern	Sept.	882	731,700	17,819	847,222	70,004	131,181	48,622	254,755	79,763	585,488	69.1	261,734	201,714	157,521	153,620
	9 mos.	882	6,319,624	152,550	7,330,901	680,806	1,206,418	425,510	2,337,168	645,957	5,305,767	72.4	2,025,134	1,465,985	1,088,837	916,536
Kansas, Oklahoma & Gulf	Sept.	326	160,005	394	163,186	24,058	21,460	7,282	35,148	10,240	97,754	59.9	65,432	49,283	32,071	54,593
	9 mos.	326	1,395,422	3,359	1,424,682	162,952	125,488	65,160	330,666	78,351	734,817	51.6	689,865	560,483	409,267	362,594
Lake Superior & Ishpeming	Sept.	160	161,230	127	188,689	29,998	19,714	617	32,023	7,632	89,984	47.7	98,705	74,492	72,828	239,917
	9 mos.	160	1,028,522	1,287	1,187,795	228,617	176,580	5,755	239,626	56,445	706,944	59.5	480,851	315,287	298,482	568,967
Lehigh & Hudson River	Sept.	96	112,759	168	114,638	15,064	16,025	3,129	38,602	8,376	81,196	70.8	33,442	21,020	8,925	30,079
	9 mos.	96	1,062,867	1,734	1,093,371	134,757	185,625	28,715	367,109	62,652	778,858	71.2	314,513	220,407	110,459	150,305
Lehigh & New England	Sept.	228	269,097	352	271,743	42,091	57,671	5,084	94,413	19,359	218,618	80.5	53,125	43,837	53,602	109,052
	9 mos.	227	2,619,745	4,180	2,644,926	326,148	577,122	46,209	883,165	142,002	1,974,526	74.7	670,400	565,204	602,097	517,379
Lehigh Valley	Sept.	1,353	2,490,119	216,834	2,940,559	210,725	560,473	106,427	1,367,472	198,460	2,463,718	83.8	476,841	298,878	182,536	691,325
	9 mos.	1,353	25,876,971	1,860,208	29,930,966	2,446,394	5,456,434	988,073	13,239,406	1,207,638	23,494,012	78.5	6,436,954	4,731,741	3,438,471	2,938,844
Louisiana & Arkansas	Sept.	608	384,385	9,429	421,386	43,631	71,925	25,269	93,832	24,608	259,519	61.5	161,867	130,046	118,852	109,949
	9 mos.	608	2,996,500	77,135	3,314,719	414,103	552,962	217,680	803,002	176,566	2,166,605	65.4	1,148,114	855,956	768,691	719,182
Louisiana, Arkansas & Texas	Sept.	255	71,552	676	77,519	19,486	10,409	4,757	28,512	5,553	65,133	77.9	12,386	9,830	—4,313	14,524
	9 mos.	255	671,670	3,183	720,247	159,222	84,616	40,375	242,339	41,714	560,717	77.9	159,530	136,938	7,420	—14,559
Louisville & Nashville	Sept.	5,051	4,739,452	458,996	5,634,594	700,765	1,197,493	152,779	2,032,095	282,017	4,398,548	78.1	1,236,046	893,545	946,356	1,439,477
	9 mos.	5,066	44,196,805	3,934,895	52,161,468	6,246,523	10,973,578	1,475,993	18,368,932	2,573,685	39,929,795	76.6	12,231,673	9,187,574	9,260,377	8,882,696
Maine Central	Sept.	1,046	709,269	77,560	879,238	146,925	115,234	12,357	302,438	38,462	615,390	70.0	263,848	216,050	194,459	202,872
	9 mos.	1,049	6,593,863	735,319	8,112,713	1,332,653	1,378,978	92,142	3,041,018	331,019	6,175,731	76.1	1,936,982	1,505,449	1,134,260	1,473,715
Midland Valley	Sept.	363	139,891	553	145,047	15,176	11,287	2,008	31,608	7,418	67,488	46.5	77,559	69,899	62,464	50,261
	9 mos.	363	918,989	3,764	959,582	138,956	97,569	20,320	254,354	58,054	564,913	58.9	394,669	336,789	274,876	307,554
Minneapolis & St. Louis	Sept.	1,627	719,924	13,994	773,667	118,033	140,222	21,949	319,759	52,734	652,090	84.3	121,577	104,896	66,040	47,665
	9 mos.	1,627	5,071,133	128,296	5,550,698	815,379	1,162,057	194,790	2,635,453	333,973	5,133,146	92.5	417,552	122,468	—81,870	157,390
Minn., St. Paul & S. S. Marie	Sept.	4,303	1,947,479	111,935	2,233,188	209,725	296,354	56,561	793,750	133,268	1,495,361	67.0	737,827	609,127	466,175	558,359
	9 mos.	4,304	14,578,473	864,718	16,855,508	2,227,755	3,122,566	523,828	6,775,468	1,026,703	13,729,617	81.5	3,125,891	1,862,805	717,939	692,866
Duluth, South Shore & Atlantic	Sept.	555	164,053	10,421	196,307	31,465	32,975	4,235	70,051	8,841	147,164	75.0	49,143	41,163	31,020	32,427
	9 mos.	557	1,453,818	87,854	1,707,064	262,701	334,369	40,245	668,279	58,801	1,360,596	79.7	346,468	249,006	155,260	32,501
Spokane International	Sept.	163	39,811	1,552	46,502	11,930	7,056	1,765	18,912	4,983	44,642	96.0	1,860	153	—2,261	—1,654
	9 mos.	163	325,424	13,550	383,472	99,610	49,977	15,478	169,626	38,855	373,502	97.4	9,970	—21,403	—42,989	—95,880
Mississippi Central	Sept.	150	50,483	2,881	55,365	7,905	9,760	6,848	16,627	5,981	47,121	85.1	8,244	5,341	2,517	6,173
	9 mos.	150	450,339	15,119	483,085	82,817	95,360	61,999	147,456	49,929	437,558	90.6	45,527	19,772	—4,552	—16,920
Missouri & North Arkansas	Sept.	364	69,485	1,206	77,178	15,240	8,447	3,236	26,972	5,429	59,324	76.9	17,854	15,954	6,843	27,906
	9 mos.	364	646,897	11,698	721,848	168,658	92,966	29,738	246,723	35,912	573,747	79.5	148,101	131,612	47,708	26,065
Missouri-Illinois	Sept.	213	80,390	718	83,222	22,178	9,512	2,761	27,702	6,745	68,898	82.8	14,324	8,618	—2,133	14,811
	9 mos.	213	692,244	4,746	713,139	160,111	91,994	23,084	233,262	52,260	560,634	78.6	152,505	103,973	36,595	9,846
Missouri-Kansas-Texas Lines	Sept.	3,293	1,872,072	158,338	2,291,617	263,626	379,444	100,662	789,925	145,383	1,698,690	74.1	592,927	445,057	273,238	608,776
	9 mos.	3,293	16,562,053	1,404,641	20,060,507	2,433,508	3,542,207	1,000,741	7,004,233	1,236,671	15,361,713	76.6	4,698,794	3,136,669	1,484,885	1,134,665
Missouri Pacific	Sept.	7,357	5,458,776	356,584	6,372,324	924,598	1,346,887	207,044	2,314,199	370,544	5,185,745	81.4	1,186,579	837,794	332,640	841,527
	9 mos.	7,359	47,637,958	2,913,509	55,568,182	7,642,599	11,587,016	1,943,261	19,463,333	2,513,278	43,315,415	78.0	12,252,767	9,291,291	5,371,439	5,581,129
Gulf Coast Lines	Sept.	1,763	560,476	39,381	663,615	120,900	143,257	42,598	226,588	60,125	593,726	89.47	69,889	22,020	36,928	52,319
	9 mos.	1,764	6,719,518	301,898	7,547,933	1,118,419	1,314,642	376,498	2,264,518	436,274	5,500,117	72.87	2,047,816	1,612,544	828,608	196,180
International-Great Northern	Sept.	1,154	918,156	60,558	1,098,212	136,953	175,275	26,061	383,649	62,462	795,933	72.48	302,279	266,151	149,187	118,028
	9 mos.	1,159	8,126,225	477,797	9,512,917	1,192,507	1,538,125	249,735	3,457,741	422,276	6,944,347	73.00	2,568,570	2,248,375	1,145,597	1,330,144
San Antonio, Uvalde & Gulf	Sept.	316	66,642	3,216	78,342	16,920	8,830	4,019	20,709	5,499	55,977	71.5	22,365	18,578	—2,239	—2,491
	9 mos.	316	735,588	25,249	823,878	155,151	83,629	37,052	246,110	40,789	562,571	68.3	261,307	226,969	41,566	—107,344
Mobile & Ohio	Sept.	1,201	618,365	31,666	689,119	88,652	164,507	39,437	255,961	47,928	596,512	86.6	92,607	60,390	3,477	10,249
	9 mos.	1,201	5,876,453	231,771	6,474,734	881,939	1,555,707	359,590	2,358,170	349,061	5,504,312	85.0	970,422	665,875	56,210	147,112

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RDS

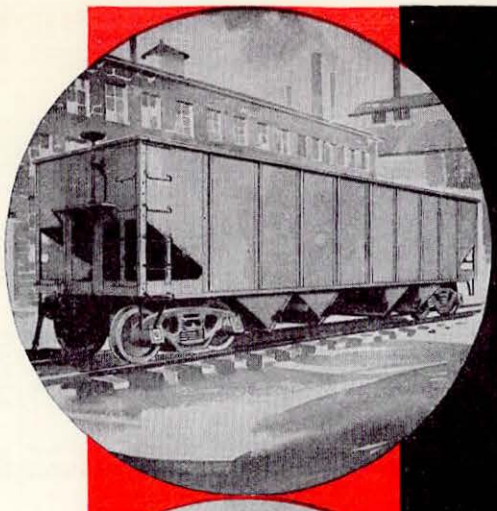
REPUBLIC DOUBLE STRENGTH STEEL

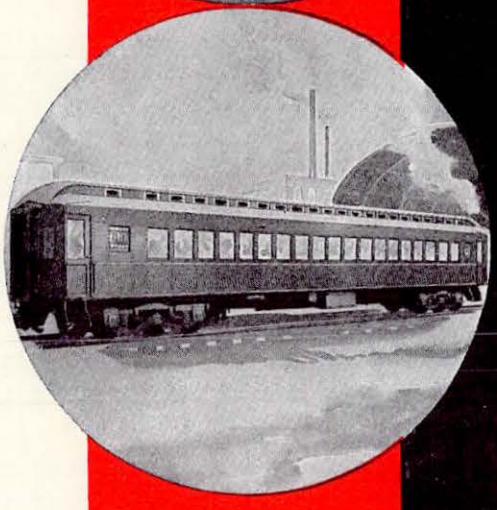
Reduces the Weight

Maintains the Strength

MEETS THE NEEDS OF MODERN TRANSPORTATION

WORLD'S LARGEST PRODUCER OF ALLOY STEELS





RAILROADS have always known that if the ratio of car dead weight to freight or passenger load could be increased, more profitable operation would be assured. With this problem clearly in mind, Republic metallurgists developed a new alloy steel, R-D-S, that is ideal for car construction, because its use permits a worth while saving in weight without sacrifice of strength or safety factor.

R-D-S shows an unusually high yield point, thus recommending it particularly for transportation equipment. Normalized sheets, strip and plates show a minimum yield point of 70,000 pounds per square inch, and a minimum tensile strength of 90,000 pounds per square inch, with a minimum elongation of 18% in 2 inches. Car sheets of R-D-S with these physical properties have proved under static and dynamic tests to be equal in strength, in 40% thinner gauges, to structural steel with a 40,000 pounds per square inch yield point.

This means that R-D-S in your freight and passenger cars will cut the dead weight and increase revenue while maintaining your safety factor. Remember, also, that you can fabricate R-D-S in your own shops with your present equipment.

Republic metallurgists will be glad to explain in greater detail the advantages of R-D-S as they apply to the construction of lighter weight equipment, and to cooperate with railroad officials and equipment manufacturers in developing applications of Republic Double Strength Steel.

★

Leadership in the production of fine alloys made possible

R-D-S

CENTRAL ALLOY DIVISION . . MASSILLON, OHIO

REPUBLIC STEEL CORPORATION

GENERAL OFFICES YOUNGSTOWN, OHIO

Revenues and Expenses of Railways

MONTH OF SEPTEMBER AND NINE MONTHS OF CALENDAR YEAR 1934—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	General	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income	Net ry. operating income, 1933
Monongahela	Sept.	177	$291,326	$710	$293,955	$29,342	$27,634	$371	$55,713	$5,686	$118,746	40.4	$175,209	$158,634	$81,729	$147,136
	9 mos.	177	2,882,203	7,562	2,909,731	296,949	256,730	3,296	577,168	36,985	1,169,913	40.2	1,739,818	1,544,269	843,563	894,042
Montour	Sept.	57	177,604	.....	178,376	11,648	34,364	820	32,870	7,957	87,659	49.1	90,717	68,092	86,211	9,464
	9 mos.	57	1,411,270	4	1,415,620	119,607	396,769	9,092	294,196	56,417	876,081	61.9	539,539	417,380	569,497	607,682
Nashville, Chattanooga & St. Louis	Sept.	1,203	826,493	78,302	1,009,212	138,163	246,394	55,056	413,538	53,571	913,217	90.5	95,995	57,492	36,168	—42,033
	9 mos.	1,203	8,029,316	655,018	9,667,686	1,291,191	2,200,368	494,358	3,733,175	497,891	8,260,749	85.4	1,406,937	1,069,601	824,986	879,511
Nevada Northern	Sept.	165	22,014	1,362	27,671	9,872	4,066	1,004	7,584	4,373	26,899	97.2	772	—6,447	—4,791	7,147
	9 mos.	165	212,926	8,149	256,839	76,998	27,616	6,435	62,614	31,074	204,737	79.7	52,102	—8,440	25,145	—33,508
New York Central	Sept.	11,401	15,534,959	4,772,055	23,240,016	2,797,887	4,855,735	550,082	8,850,252	999,686	18,400,716	79.2	4,839,300	3,466,019	2,138,319	3,967,000
	9 mos.	11,401	154,574,275	41,012,362	222,599,596	22,614,762	45,384,101	4,719,108	82,303,587	9,136,828	167,126,706	75.1	55,472,890	36,000,963	23,455,934	25,785,796
Pittsburgh & Lake Erie	Sept.	233	1,108,267	43,720	1,189,446	157,461	427,786	23,410	410,948	63,063	1,090,042	91.6	99,404	37,222	166,519	335,435
	9 mos.	233	10,982,825	425,741	11,787,181	1,027,309	3,862,882	221,109	3,952,906	581,954	9,702,861	82.3	2,084,320	1,307,433	2,607,398	2,340,076
New York, Chicago & St. Louis	Sept.	1,691	2,471,908	114,326	2,686,048	346,960	372,784	101,534	934,469	120,293	1,875,610	69.8	810,438	654,598	392,434	551,360
	9 mos.	1,691	23,610,149	705,862	25,197,229	2,662,397	3,683,619	901,294	8,685,343	1,093,692	16,992,210	67.4	8,205,019	6,857,856	4,362,305	4,016,701
New York, New Haven & Hartford	Sept.	2,072	2,928,880	1,819,668	5,436,818	663,372	967,614	68,765	2,127,328	320,693	4,263,258	78.4	1,173,560	798,375	285,577	926,157
	9 mos.	2,069	29,830,201	16,114,146	52,086,998	6,064,735	9,261,855	660,904	20,264,164	2,265,389	39,669,281	76.2	12,417,717	9,094,211	4,303,518	5,728,438
New York Connecting	Sept.	20	192,856	.....	203,852	12,040	6,815	.....	28,890	1,121	48,866	24.0	154,986	121,686	82,707	98,160
	9 mos.	20	1,912,585	.....	2,018,713	96,711	66,286	.....	257,169	9,164	429,330	21.3	1,589,383	1,288,853	929,634	1,030,369
New York, Ontario & Western	Sept.	568	690,001	40,314	798,026	119,852	138,973	10,619	317,364	39,204	627,838	78.7	170,188	135,175	80,572	112,474
	9 mos.	568	6,333,794	381,144	7,377,233	852,463	1,308,430	104,036	2,978,474	251,168	5,525,244	74.9	1,851,989	1,453,295	1,005,892	1,401,389
Norfolk & Western	Sept.	2,184	5,461,739	164,694	5,810,185	639,335	1,279,756	111,501	1,365,355	281,300	3,695,445	63.6	2,114,740	1,414,152	1,601,548	3,152,790
	9 mos.	2,185	51,477,108	1,325,205	54,505,830	5,705,305	12,237,919	1,015,268	12,353,974	1,923,794	33,349,492	61.2	21,156,338	14,892,653	16,374,081	17,647,046
Norfolk Southern	Sept.	932	375,335	12,507	406,597	72,104	50,030	20,384	149,316	32,141	323,975	79.7	82,622	56,594	29,564	34,989
	9 mos.	932	3,428,870	94,965	3,683,071	608,992	444,968	173,149	1,274,535	217,970	2,719,614	73.8	963,457	726,187	459,677	60,412
Northern Pacific	Sept.	6,745	4,399,111	314,678	5,152,288	480,533	983,577	131,795	1,726,683	336,907	3,725,169	72.3	1,427,119	933,147	1,179,287	1,535,350
	9 mos.	6,745	32,019,249	2,561,058	38,196,589	4,241,425	8,061,273	1,333,875	14,330,134	2,487,595	30,995,730	81.1	7,200,859	2,811,041	5,364,519	3,007,991
Northwestern Pacific	Sept.	386	167,212	81,146	277,654	38,481	46,155	4,084	144,482	20,619	253,779	91.4	23,875	8,594	—4,129	29,451
	9 mos.	386	1,459,604	733,722	2,482,823	351,256	420,406	38,312	1,252,201	137,412	2,197,998	88.5	284,825	137,529	37,892	—188,852
Oklahoma City-Ada-Atoka	Sept.	132	22,828	323	25,247	5,498	1,366	722	9,998	1,942	19,526	77.3	5,721	3,005	—3,486	—1,795
	9 mos.	132	231,390	3,051	250,278	44,994	14,890	5,972	91,042	14,915	171,149	68.4	79,129	52,901	—8,416	—10,521
Pennsylvania Railroad	Sept.	10,511	19,125,112	5,086,132	26,957,102	2,244,594	4,645,741	597,083	9,634,809	1,967,154	19,396,521	72.0	7,560,581	5,084,499	4,372,060	7,158,096
	9 mos.	10,511	191,055,386	43,579,875	260,488,307	23,784,678	51,169,635	5,106,986	92,701,341	13,278,075	188,993,072	72.6	71,495,235	52,756,400	45,128,497	47,410,715
Long Island	Sept.	400	440,039	1,507,558	2,049,281	129,602	291,501	14,628	816,777	86,050	1,340,158	65.4	709,123	416,757	240,873	350,567
	9 mos.	400	4,224,721	13,376,208	18,494,401	1,604,259	2,828,871	131,427	8,070,738	559,889	13,197,978	71.4	5,296,423	3,220,562	1,652,021	3,070,215
Pennsylvania-Reading Seashore Lines	Sept.	411	242,088	298,878	571,088	33,204	79,879	11,815	329,574	35,730	490,571	85.9	80,517	—15,457	—124,336	—177,420
	9 mos.	411	2,076,613	2,292,596	4,611,000	385,272	694,773	86,685	2,863,526	256,539	4,282,381	92.9	328,619	—455,795	—1,427,377	—777,093
Pere Marquette	Sept.	2,222	1,562,422	66,032	1,734,705	260,294	412,197	62,865	725,149	87,654	1,552,485	89.5	182,220	90,819	—23,115	109,392
	9 mos.	2,236	17,237,427	588,081	18,892,596	2,149,292	4,058,001	525,010	7,105,414	794,821	14,665,369	77.6	4,227,227	3,343,656	2,393,182	1,211,221
Pittsburg & Shawmut	Sept.	101	44,200	531	45,371	8,569	18,564	1,325	14,363	4,625	47,446	104.6	—2,075	—3,092	1,120	13,463
	9 mos.	101	466,896	3,926	477,048	85,387	156,842	12,112	148,928	28,935	432,204	90.6	44,844	38,859	84,036	89,083
Pittsburgh & West Virginia	Sept.	138	199,717	.....	210,890	27,919	52,498	13,796	45,517	16,641	164,149	77.8	46,741	24,921	60,477	86,619
	9 mos.	138	2,014,657	.....	2,106,878	195,271	549,596	126,819	431,936	127,847	1,503,287	71.4	603,591	401,198	666,657	739,835
Pittsburg, Shawmut & Northern	Sept.	195	58,693	125	60,566	16,527	14,199	1,191	24,695	8,024	64,636	106.7	—4,070	—6,152	—11,183	28,860
	9 mos.	195	653,470	1,543	679,203	171,079	174,343	11,775	252,770	59,710	669,677	98.6	9,526	—10,622	—58,503	65,322
Reading	Sept.	1,461	3,499,192	229,358	3,930,120	313,077	615,557	67,467	1,520,452	285,924	2,820,007	71.8	1,110,113	835,332	862,295	1,455,866
	9 mos.	1,461	36,105,839	2,220,939	40,269,160	2,950,271	7,422,376	643,463	14,851,886	1,811,025	27,834,202	69.1	12,434,958	9,592,703	9,735,526	9,905,521
Richmond, Fredericksburg & Potomac	Sept.	117	200,060	107,852	390,444	47,331	97,259	7,752	181,936	39,991	379,715	97.3	10,729	—9,610	—14,557	2,394
	9 mos.	117	2,515,745	1,167,872	4,685,390	455,659	1,028,079	73,777	1,842,296	282,475	3,767,084	80.4	918,306	674,937	351,788	374,511
Rutland	Sept.	413	181,104	41,714	284,373	53,398	52,064	9,565	125,924	13,727	254,678	89.6	29,695	9,830	12,920	52,484
	9 mos.	413	1,655,947	304,911	2,482,666	433,866	504,701	92,674	1,169,754	121,765	2,322,159	93.5	160,507	—19,656	7,242	226,458
St. Louis-San Francisco	Sept.	5,099	2,980,926	223,111	3,508,917	603,880	831,772	94,186	1,243,427	212,740	2,984,852	85.06	524,065	267,131	254,993	459,952
	9 mos.	5,162	26,045,966	1,812,446	30,494,938	4,973,035	7,052,196	857,013	10,706,079	1,445,454	25,033,886	82.09	5,461,052	3,097,463	2,831,441	2,663,847
Fort Worth & Rio Grande	Sept.	233	36,218	1,683	45,151	9,815	11,310	2,257	23,181	4,784	51,332	113.7	—6,181	—9,965	—16,152	—23,731
	9 mos.	233	264,136	11,024	335,588	117,489	89,396	20,657	193,346	35,500	456,339	136.0	—120,751	—154,592	—204,233	—318,281
St. Louis, San Francisco & Texas	Sept.	261	68,076	757	72,168	30,208	16,517	4,479	43,323	9,726	104,243	144.4	—32,075	—36,169	—60,089	—20,926
	9 mos.	261	699,719	5,460	733,893	268,540	139,559	40,885	312,209	72,391	832,333	113.4	—98,440	—135,292	—365,063	—283,098
St. Louis Southwestern Lines	Sept.	1,810	1,061,970	18,535	1,136,834	111,016	156,933	68,948	383,055	86,200	812,013	71.4	324,821	251,613	166,771	181,685
	9 mos.	1,835	10,130,105	153,637	10,782,743	1,128,668	1,526,860	608,713	3,515,858	593,764	7,427,479	68.9	3,355,264	2,718,466	1,545,312	1,216,919
San Diego & Arizona Eastern	Sept.	155	26,209	3,465	31,249	9,975	9,131	1,720	14,459	4,890	40,739	130.4	—9,490	—12,337	—9,881	—5,816
	9 mos.	155	304,257	41,070	355,111	88,600	78,763	14,569	140,149	39,158	366,334	103.2	—11,223	—28,913	—17,190	—31,315

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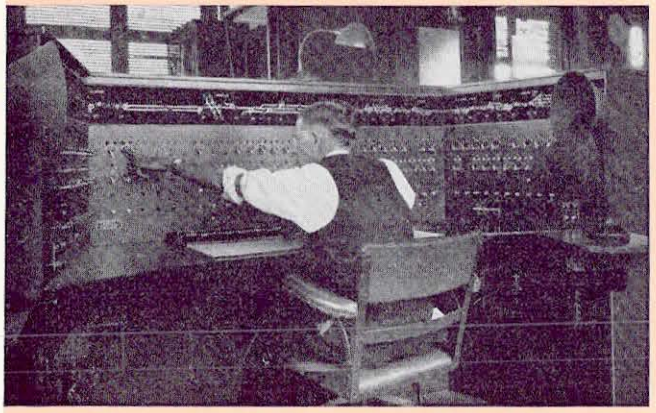
IMPROVED TRANSPORTATION

Through Signal Systems that Provide Greater Safety, More Economies and Increased Track Capacity.

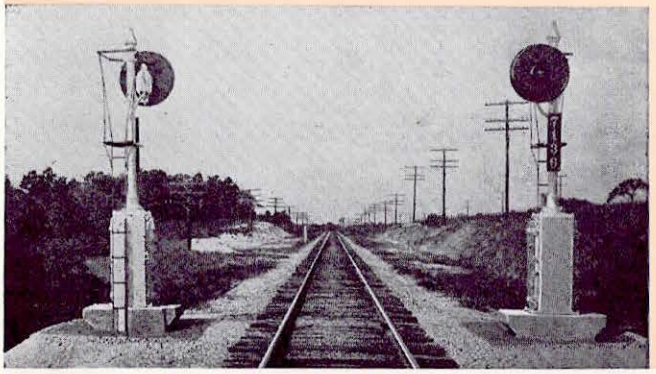
Centralized Traffic Control

THE "Union" Centralized Traffic Control System eliminates the written train order and permits operation by signal indications. It is an efficient and economical method of directing trains over the road. The machine presents a continuous picture of what is transpiring on the line and the automatic train graph makes a permanent "OS" record of every train movement. It almost doubles existing traffic capacity and indefinitely postpones construction of additional trackage.



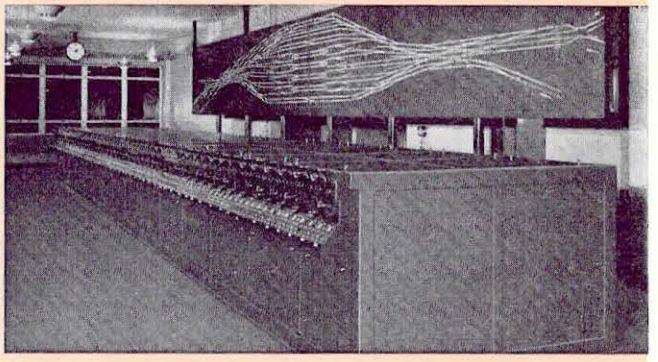
Searchlight Signals

ALL indications of the "Union" Search-light Signal are projected through the same lens. Its single optical system results in a compact signal requiring minimum space. It is equally effective for high and dwarf signals. Other vantage points for this signal are (1) where fog and other adverse conditions require beams with high penetrating power; (2) where strong sunlight is encountered and (3) on automatic block signal installations where its long range indications are important because of high train speeds. "Union" Searchlight Signals employ but one low wattage lamp for the three indications.



Cab Signals

THE "Union" Coded Continuous Cab Signal System enables its users to secure the additional increase in speed with safety required by modern transportation schedules. Increasing speed with safety and maintaining schedules is a necessity in present day business and living. Continuously controlled and constantly visible, the cab signal overcomes all obstacles as far as the visibility of signals is concerned. The signals ride in the cab and are before the engine crew, irrespective of fog, snow, sleet or storm.



Power Interlocking

MANY years of economic accomplishments have been achieved through use of the "Union" Power Interlocking Systems. They are built for a long life of efficient service; are simple in design and operation; their rugged construction assures low maintenance costs; the machine requires relatively little tower space. "Union" Power Interlocking popularity is evidenced by its use at most of the large terminals in this country and throughout the world. It has reduced maintenance labor costs to the minimum and effected large savings at large terminals as well as at small remote locations.

1881 **Union Switch & Signal Co.** 1934

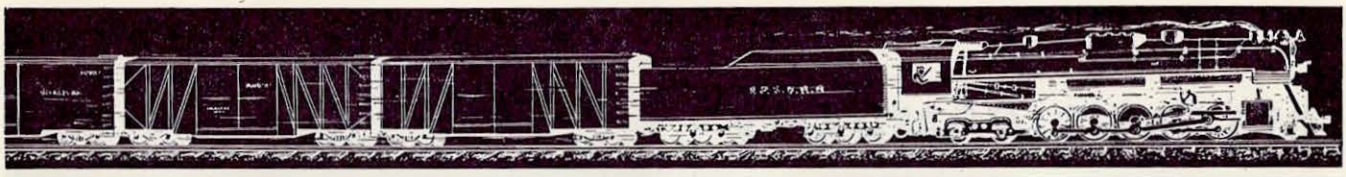
SWISSVALE, PA.

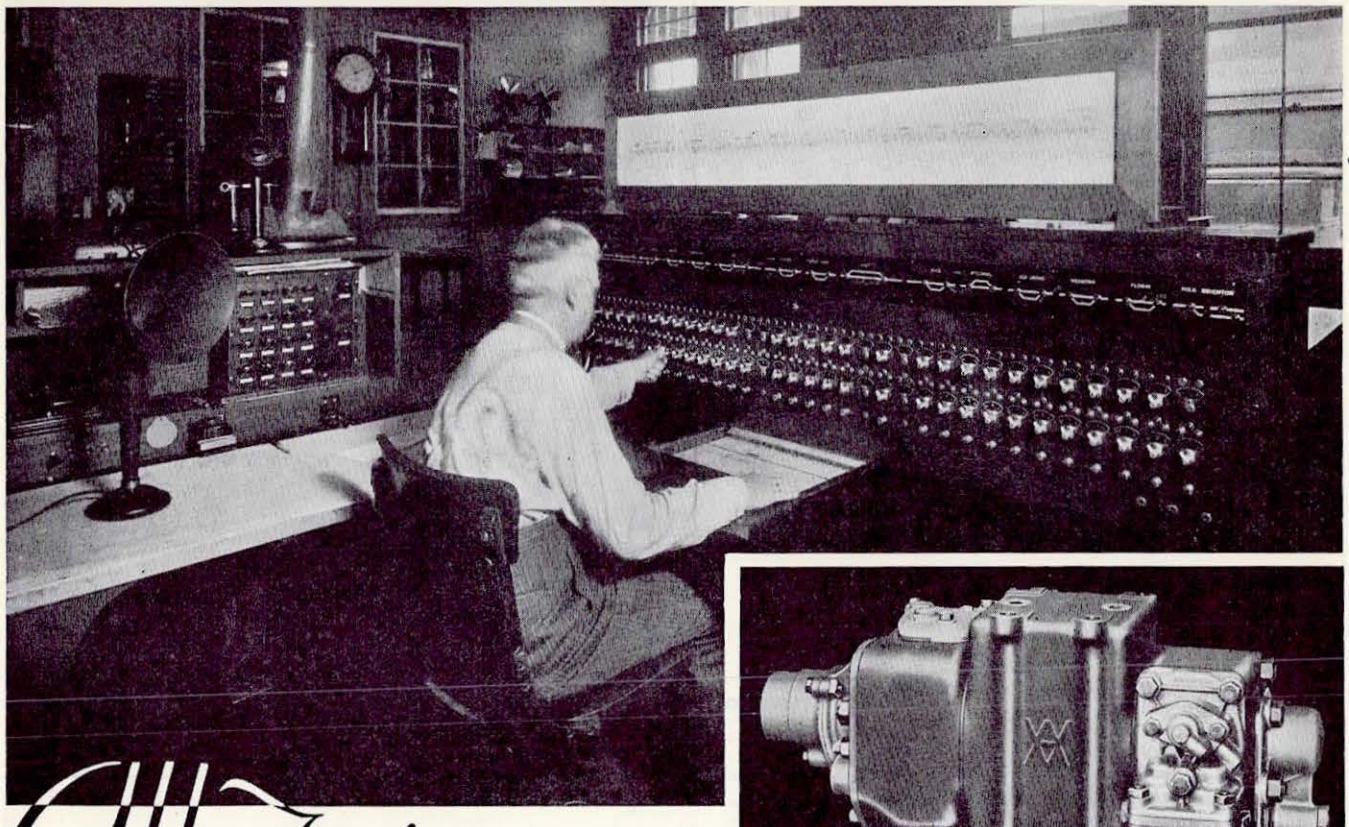
NEW YORK MONTREAL CHICAGO ST. LOUIS SAN FRANCISCO

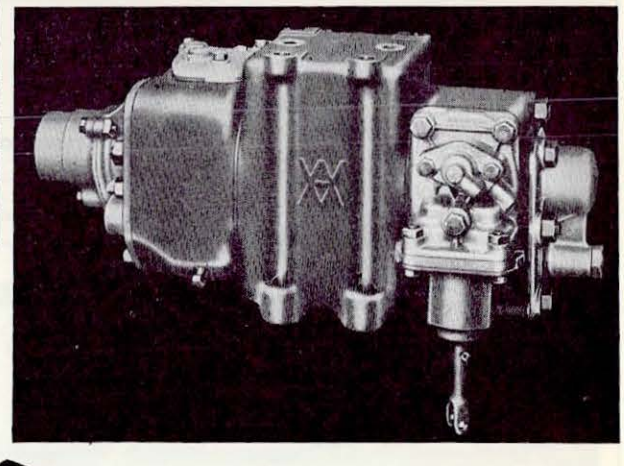
Revenues and Expenses of Railways

MONTH OF SEPTEMBER AND NINE MONTHS OF CALENDAR YEAR 1934—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	General	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income	Net ry. operating income, 1933
Seaboard Air Line	Sept.	4,308	$1,781,004	$241,401	$2,270,856	$432,518	$539,132	$128,910	$935,630	$180,354	$2,241,746	98.7	$29,110	—$127,651	—$156,800	$94,642
	9 mos.	4,309	20,394,221	2,466,835	25,529,343	4,231,370	5,339,183	1,180,516	9,154,785	1,275,267	21,456,292	84.0	4,073,051	2,233,832	1,315,252	1,815,048
Southern Railway	Sept.	6,644	4,886,142	707,812	6,180,956	825,960	1,194,235	135,314	2,322,821	357,027	4,874,651	78.9	1,306,305	862,771	711,116	1,472,761
	9 mos.	6,644	47,138,653	5,928,559	58,379,747	7,671,665	10,890,831	1,255,583	21,314,245	2,422,738	43,904,493	75.2	14,475,254	10,405,213	8,755,791	11,242,866
Alabama Great Southern	Sept.	315	329,805	45,889	409,919	72,882	96,889	11,211	133,194	20,013	336,802	88.2	73,117	52,740	54,290	100,993
	9 mos.	315	2,980,597	383,783	3,662,860	656,840	812,609	95,566	1,205,905	141,110	2,933,424	80.1	729,436	512,587	482,281	444,842
Cinn., New Orleans & Texas Pacific	Sept.	336	782,095	65,532	906,298	148,859	190,708	25,425	250,980	51,890	671,592	74.1	234,706	166,999	140,647	320,930
	9 mos.	336	8,315,242	594,947	9,448,572	1,176,414	1,672,021	212,754	2,417,927	350,116	5,867,861	62.1	3,580,711	2,943,342	2,556,600	2,730,542
Georgia Southern & Florida	Sept.	397	96,224	23,047	134,156	28,704	34,477	1,508	62,098	5,798	134,397	100.2	—241	—13,140	—6,820	—9,726
	9 mos.	397	1,022,966	234,565	1,419,266	260,157	330,061	14,861	626,425	28,478	1,278,672	90.1	140,594	23,004	73,190	11,106
New Orleans & Northeastern	Sept.	204	144,798	21,734	180,865	25,289	34,132	5,521	64,218	11,365	141,967	78.5	38,898	15,276	2,260	32,468
	9 mos.	204	1,358,010	162,995	1,645,792	231,643	310,266	49,102	571,107	83,195	1,258,000	76.4	387,792	177,236	45,887	—212,721
Northern Alabama	Sept.	99	41,797	1,640	45,166	7,920	1,863	1,278	14,985	2,377	28,423	62.9	16,743	13,593	3,093	—1,111
	9 mos.	99	372,959	15,133	403,352	88,699	13,444	10,334	135,949	16,385	263,959	65.4	139,393	110,606	20,589	—20,656
Southern Pacific	Sept.	8,798	7,570,207	1,278,398	9,834,219	825,345	1,721,961	266,839	3,526,632	713,450	7,237,354	73.6	2,596,865	1,817,676	1,513,929	1,643,532
	9 mos.	8,844	64,922,258	11,777,596	84,901,153	8,434,843	14,544,512	2,422,813	29,458,204	5,154,051	61,573,732	72.5	23,327,421	15,951,881	12,738,626	4,822,161
Southern Pacific Steamship Lines	Sept.	....	346,681	22,591	381,204	12,555	103,747	15,517	293,320	27,376	452,515	118.7	—71,311	—71,828	—69,943	3,563
	9 mos.	....	3,094,878	143,154	3,343,385	138,923	980,916	145,706	2,456,830	191,129	3,913,504	117.1	—570,119	—575,912	—571,926	—326,897
Texas & New Orleans	Sept.	4,447	2,176,971	208,595	2,727,413	470,605	590,287	108,816	959,107	254,502	2,397,615	87.9	329,798	82,532	—94,579	142,331
	9 mos.	4,467	18,774,733	1,856,224	23,484,243	3,696,715	5,418,915	996,574	8,154,207	1,922,938	20,287,667	86.4	3,196,576	1,091,606	—682,560	—417,722
Spokane, Portland & Seattle	Sept.	552	528,432	35,248	597,219	57,974	62,530	5,761	161,188	20,428	310,376	52.0	286,843	232,438	194,755	147,652
	9 mos.	552	3,777,138	350,354	4,442,722	396,892	552,181	53,608	1,328,349	141,794	2,490,873	56.1	1,951,849	1,437,614	1,185,657	590,546
Tennessee Central	Sept.	287	156,733	5,942	173,286	29,003	26,943	5,003	59,752	12,943	133,635	77.1	39,651	37,646	22,498	39,196
	9 mos.	287	1,428,214	48,056	1,566,013	249,748	231,534	46,461	527,374	99,524	1,153,384	73.7	412,629	376,681	248,874	216,042
Texas & Pacific	Sept.	1,949	1,574,252	157,876	1,960,529	192,137	315,080	62,239	581,255	134,678	1,301,784	66.4	658,745	554,570	475,264	369,860
	9 mos.	1,950	13,167,571	1,399,094	16,459,707	1,660,453	2,800,013	574,734	4,808,620	1,033,130	11,019,218	66.9	5,440,489	4,467,513	3,450,856	2,523,488
Texas Mexican	Sept.	162	78,792	349	89,676	11,915	10,441	2,542	33,120	8,513	66,531	74.2	23,145	18,895	13,654	—7,193
	9 mos.	162	620,216	3,155	687,174	94,445	106,084	26,182	245,424	63,838	535,101	77.9	152,073	113,086	74,114	—89,570
Toledo, Peoria & Western	Sept.	239	134,942	6	137,164	36,668	14,906	14,554	40,273	7,172	113,573	82.8	23,591	17,336	2,246	13,827
	9 mos.	239	1,282,347	127	1,301,638	336,600	110,591	132,719	367,792	77,693	1,025,375	78.8	276,263	233,902	108,762	167,886
Union Pacific	Sept.	3,767	5,659,888	531,623	6,723,733	522,673	1,195,046	101,791	1,990,657	354,175	4,251,155	63.2	2,472,578	1,953,135	1,506,831	1,505,395
	9 mos.	3,767	41,147,083	3,944,519	49,574,295	4,618,189	11,073,132	1,034,826	14,797,817	2,534,637	34,724,089	70.0	14,850,206	10,699,699	8,234,864	9,177,211
Oregon Short Line	Sept.	2,504	2,033,145	113,924	2,268,325	171,807	294,241	29,407	674,977	123,561	1,314,759	58.0	953,566	724,705	601,268	614,586
	9 mos.	2,504	13,385,359	911,640	15,484,889	1,897,887	2,505,983	279,389	4,860,182	844,851	10,666,174	68.9	4,818,715	2,773,311	2,055,477	1,783,852
Oregon-Wash. R. R. & Nav. Co.	Sept.	2,293	1,199,143	119,729	1,447,279	269,806	158,921	44,240	519,864	107,414	1,108,255	76.6	339,024	202,474	73,348	149,369
	9 mos.	2,294	9,303,417	924,323	11,452,842	2,075,597	1,596,949	424,223	4,066,076	792,400	9,013,569	78.7	2,439,273	1,210,233	301,751	—309,983
Los Angeles & Salt Lake	Sept.	1,232	1,123,046	139,450	1,379,165	105,993	151,848	40,660	387,272	70,622	791,943	57.4	587,222	468,210	356,196	247,262
	9 mos.	1,239	10,073,958	1,164,282	12,211,203	1,311,100	1,759,266	384,540	3,447,125	522,289	7,704,271	63.1	4,506,932	3,424,060	2,360,965	918,758
St. Joseph & Grand Island	Sept.	258	272,270	1,796	280,215	29,027	39,515	2,296	82,412	14,850	168,420	60.1	111,795	101,520	60,535	69,197
	9 mos.	258	2,053,672	17,021	2,131,881	278,290	231,433	19,543	631,230	108,236	1,274,936	59.8	856,945	725,784	440,874	387,677
Utah	Sept.	111	71,259	.....	71,515	14,417	20,141	480	16,764	4,934	56,736	79.3	14,779	4,295	—3,938	8,765
	9 mos.	111	425,266	.....	426,600	87,160	147,056	4,800	107,657	44,634	391,307	91.7	35,293	—27,858	—119,515	36,326
Virginian	Sept.	619	1,170,374	43,719	1,220,283	90,928	190,225	17,171	198,348	37,153	532,985	43.7	687,298	537,231	611,243	608,791
	9 mos.	619	10,171,161	45,392	10,634,462	914,197	1,869,501	147,603	1,873,929	249,142	5,047,910	47.5	5,586,552	4,286,478	4,868,154	4,474,607
Wabash	Sept.	2,457	2,531,398	203,918	2,954,203	415,307	484,063	129,614	1,161,346	184,649	2,384,960	80.7	569,243	439,578	126,887	404,739
	9 mos.	2,457	25,468,630	1,536,565	28,870,257	3,636,552	4,609,991	1,191,970	10,860,321	1,227,371	21,584,839	74.8	7,285,418	6,101,286	3,027,338	1,532,696
Ann Arbor	Sept.	293	241,514	3,215	257,158	26,214	46,724	10,979	117,520	16,258	217,876	84.7	39,282	28,753	10,949	40,759
	9 mos.	293	2,366,300	27,719	2,486,572	221,949	445,220	97,417	1,054,522	104,131	1,924,874	77.4	561,698	444,300	276,574	157,079
Western Maryland	Sept.	888	1,069,263	6,160	1,099,729	160,892	227,730	35,216	297,013	40,469	764,241	69.5	335,488	285,488	330,939	429,115
	9 mos.	890	9,998,465	80,728	10,357,325	1,395,092	2,293,354	311,360	2,656,180	389,294	7,068,113	68.2	3,289,212	2,669,212	3,029,497	2,876,619
Western Pacific	Sept.	1,213	1,180,197	27,894	1,313,334	196,729	177,292	53,335	413,904	89,771	994,073	75.7	319,261	250,229	189,207	287,218
	9 mos.	1,213	8,189,967	216,486	8,892,229	1,451,337	1,460,854	485,720	3,118,575	399,179	7,172,649	80.7	1,719,580	1,096,414	850,542	350,914
Wheeling & Lake Erie	Sept.	511	727,981	1,442	778,556	94,344	209,292	27,097	264,457	41,182	636,041	81.7	142,515	78,540	57,065	274,155
	9 mos.	511	8,109,732	13,884	8,646,928	863,714	2,617,069	255,214	2,597,133	281,296	6,612,942	76.5	2,033,986	1,297,672	1,169,611	1,485,324
Wichita Falls & Southern	Sept.	203	39,656	74	44,819	7,874	5,661	1,674	12,634	3,923	31,766	70.88	13,053	10,186	8,352	8,131
	9 mos.	203	349,024	432	395,774	81,212	58,978	15,406	115,202	31,509	302,307	76.38	93,467	66,769	41,626	49,475







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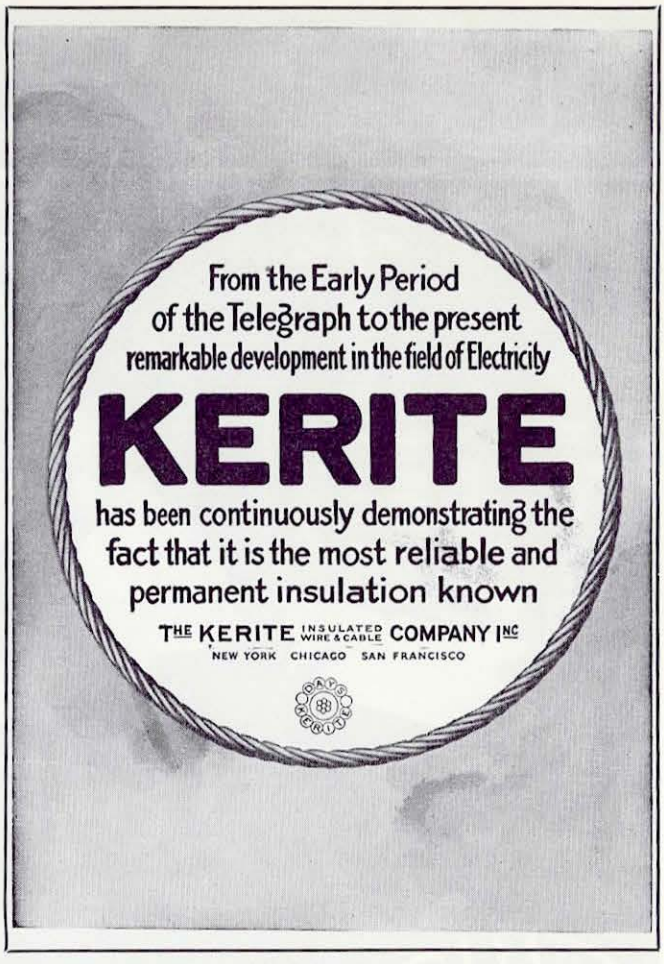
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Name ..... Old Address .....

New Address .....

..... Position ..... Company .....

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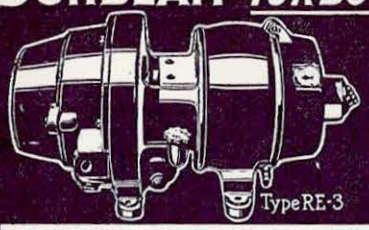

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ENGINE CASTINGS

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For Complete Alphabetical Index to Advertisers see page 24

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and reduce your "Material" costs at least 50%! ! !
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102 Delward Bldg., Buffalo, N. Y.

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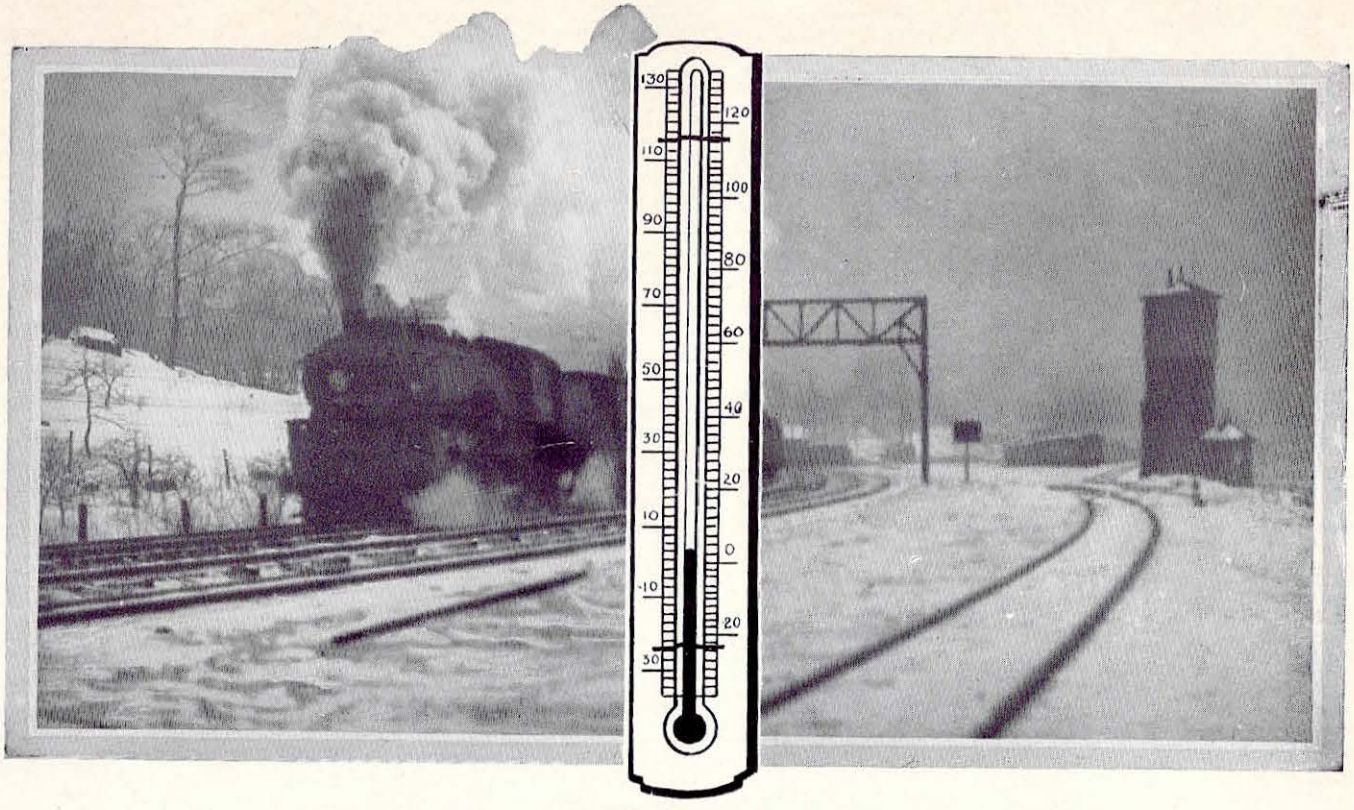

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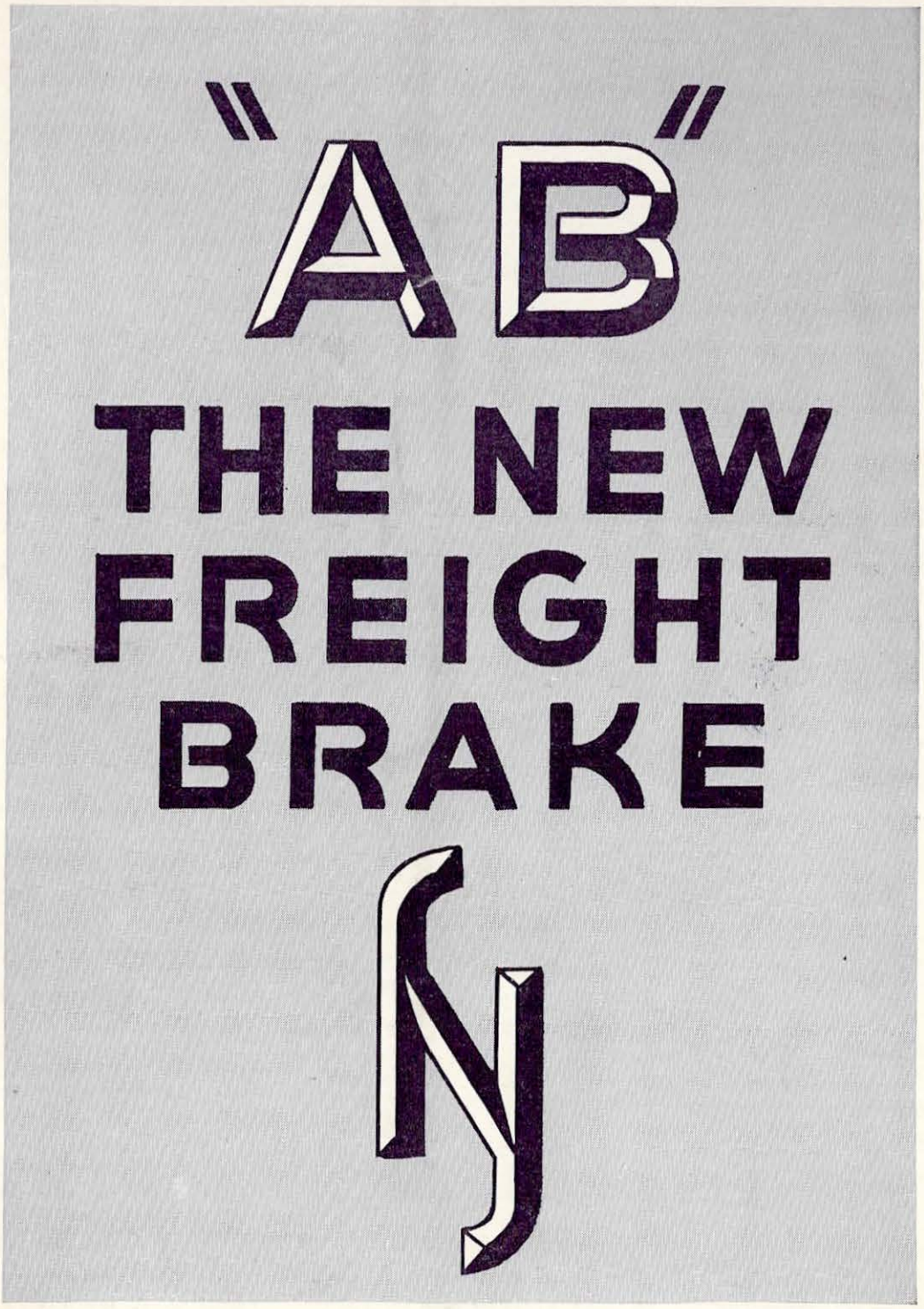

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